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SUGGESTIONS FOR REVISING THE SEVENTH DECENNIAL UNITED STATES PHARMACOPŒIA.

By Lyman F. Kebler, Ph.C., M.S.

The date for the convention to consider the principles to be observed in revising the present Pharmacopœia is rapidly approaching, and hints from the various workers throughout this country will, undoubtedly, be duly appreciated by the Committee of Revision. It has been the writer's good fortune to study our legal pharmaceutical and medical standard and guide from various points of view, and some of the conclusions arrived at he now desires to present.

Permit the writer to say, by way of introduction, that, if some of the language should appear to be dressed in the garb of criticism, it is not the sole function of criticism to find fault; but its chiefest and sublimest part is to observe those essentials which should appeal to the reasonable thinker. The latter is the spirit of these few comments and suggestions.

The 1890 Pharmacopœia is conspicuously a monumental record of American progressiveness. Its standards are of exceptional value. The more we study its contents, the more are we impressed with the fund of knowledge possessed by the various workers who assisted in its compilation. Some of them placed their standards so high for some chemicals that the ideal rather than the real seemed to have been in mind; consequently, the requirements are frequently those of C.P. articles, in the strict sense of the word, and some of the best manufacturers in the country have literally refused to make some of the U.S.P. products, so as to comply with that standard at current prices.

Then, again, the Pharmacopœia contains a number of analytical methods which are either impracticable of application, or, if applied, lead to erroneous conclusions. In the writer's opinion, it is far better not to give any directions than to give a method which requires time and money for execution and yet yields results that are worse than useless.

As an example, the writer desires to call attention to the directions for estimating the moisture in wool-fat. "When heated on a water-bath, it finally leaves a residue amounting to not less than 70 per cent." If these directions are followed, the oily portion and the water separate, when the temperature of the bath is raised sufficiently to melt the fatty product, and the water sinks to the bottom, while the fat floats on top. This separation into layers effectually prevents the vaporizing of the aqueous portion at the temperature of the water-bath. Even at 115° C. the fatty layer retards the vaporization of the water very materially. The writer would not venture to report on the results obtained at the latter temperature unless heated a very long time.

The proper way to estimate the moisture in this product is to place a given weight of the article into a tared evaporating dish, containing clean, dry sand or powdered glass, and a small glass stirring rod; warm on the water-bath, intimately mix, and occasionally stir while evaporating on the water-bath. Finally place in an air-bath and dry to constant weight at 100° C. The amount of moisture can now be easily ascertained if the proper weights are at hand.

Let us now consider the position of some chemicals. Suppose, for example, one of our States allows the use of sodium benzoate as a preservative of jellies, mince-meats, fruits, etc., but requires the chemical to be of U.S.P. quality. One manufacturer claims that his article is U.S.P. because he employs U.S.P. goods from which to make it. Another maker says he cannot manufacture a U.S.P. article at the present commercial price. Yet, both use the same U.S.P. goods to make their sodium benzoate.

The reader perhaps wonders where the difference comes in. It is this: one judges his goods by the spirit of the Pharmacopœia, the other by the letter of the text. The requirements of both sodium carbonate and the bicarbonate allow a limit of chloride; and of course it is expected (the spirit) to employ one of these to

make the benzoate from; but according to the tests for this compound the presence of a chloride is rigidly excluded. Some one says, and rightly, "Such a small amount of chloride is perfectly harmless." But according to the letter of the text it is not U.S.P., and a hair-splitting commission might make it unpleasant for some one.

Then again, potassium citrate is 100 per cent. pure, chlorides and sulphates being rigidly excluded; yet citric acid is allowed to have a limit of sulphuric acid and metallic impurities, and potassium carbonate and bicarbonate are both allowed to contain a limit of chloride.

This state of affairs requires circumspection and investigation, in view of some of the present existing State laws, which designate the Pharmacopœia as standard for all officinal preparations.

It would seem eminently desirable to adopt the Pharmacopœia as a legal standard or guide, otherwise there would probably be as many standards for medicinal remedies and commercial goods as there are commissions. The limitations ought not, however, to be so exacting, excepting where absolutely fresh material is necessary, as to be applicable to a preparation only once, and that when freshly prepared. Impossibilities should not be requested. The standard ought to allow a reasonable degree of variation for products that are prone to change under the most favorable environments. To bring this home forcibly it is only necessary to mention such preparations as spirit of ammonia, bleaching powder, tincture of iodine, spirit of nitrous ether, etc. Another thing, however, must be considered in this connection, and that is, if the Pharmacopœia is adopted as a legal standard for various articles, the wilful adulterator will carefully study this standard and so adjust his adulterations that the article adulterated will comply with the legal standard, and yet be adulterated.

For example, wood alcohol (methyl alcohol) is at present so highly refined that it can readily be employed as an adulterant of grain alcohol (ethyl alcohol) without much liability of being detected by the present pharmacopœial tests. Some of the essential and fixed oils can readily be manipulated and yet comply with the U.S.P. standards. Oil of copaiba is met with mixed with oil of gurjun balsam, and oil of peppermint containing 25 per cent. of oil of turpentine finds its way into the channels of trade; but the

U.S.P. tests are not adequate to reveal the adulterations. The official oils of eucalyptus are substituted by or adulterated with some of the many eucalyptus oils derived from the many species of eucalyptus. The olive oil—cotton-seed oil tests are far from satisfactory, and cod liver oil may contain a considerable amount of other fish oils without much fear of positive detection.

It also frequently happens that a test or method or standard of to-day is rendered perfectly useless by the investigations of to-morrow. For these reasons it appears to the writer that it is undesirable to adopt the Pharmacopœia as a hard-and-fast standard, but rather let the Pharmacopœia be the guide, supplemented by all other available standard literature.

The general principles adopted by the National Convention of 1890, to be followed in revising the Pharmacopœia, were excellent in character and spirit. Let us quote just one. "In the case of chemicals the degree of purity or the allowable percentage of impurity shall be prescribed as closely as practicable. The standard of purity shall be set as high as practicable for legal enforcement, but not beyond a point reasonably attainable by the manufacturer without subjecting any particular product to unnecessary cost, through the enforced removal of some harmless and insignificant accidental impurity."

The above is certainly comprehensive and liberal enough not only for the manufacturer, but for the consumer also. The spirit of this resolution has apparently not been fully kept in mind when adjusting the standard of some chemicals.

The following is what a foreign manufacturer writes when he was notified concerning the rejection of some of his goods:

"With regard to the sodium hypophosphite, we know that it is alkaline in reaction, so is T. & K.'s—and the reason it is so is because both the sodium and potassium are made with calcium hypophosphite, by precipitation, with the respective alkaline carbonates, and the balance of decomposition is so near that it will either contain calcium or be alkaline. And we find that being slightly alkaline prevents the insolubility and want of turbidity which would be seen if the calcium were present. With regard to the sulphates and chlorides, we again say that the quantities are but mere traces and do not affect the medicinal use of the article. If people want hypophosphites and half the other things to stand the

tests of the Pharmacopœia they will have to pay a guinea an ounce for some of them."

These remarks are directly in accord with the resolution quoted above, and no one can justly say that they savor of commercial gain. In this age of reasonable goods there are but few, if any, who are willing or can afford to pay for the heavy expense necessary to remove traces of chlorides or sulphates from medicinal agents which would not be enhanced therapeutically, or for commercial purposes, *one iota*, as the result. The manufacturer is willing, if he can get the right prices, to supply anything asked for.

In prescribing standards for the U.S.P. the writer is of the opinion that the following three propositions should be rigidly kept in mind:

(1) The standard of all U.S.P. preparations, drugs and chemicals should be so adjusted that they are not only satisfactory medicinally, but that they can also be manufactured from other U.S.P. goods, which enter into their preparation either in part or as a whole.

(2) The requirements of all U.S.P. goods should be such that they can be employed in the manufacture of all other U.S.P. goods, of which they form an integral part, either in part or as a whole.

(3) The best medicinal goods available in commerce should form the basis of all standards.

The present Pharmacopœia is frequently at variance with the above propositions. Suffice it to say that when standards are so exacting that not a single manufacturer's goods will comply with them, these standards must of necessity become dead letters and of non-effect. As the result, each analyst must take a responsibility upon himself that belongs elsewhere, namely, the establishment of a fair and just standard.

This introduces us to a very important subject, namely, the determination of the constants of the various substances, the degree of purity, limit of impurities, etc. In this matter the Pharmacopœia should give such information that the results obtained by the various workers in various parts of the country would be fairly concordant and easily arrived at.

On looking over the constants of the Pharmacopœia the careful observer will soon ask: "Are the various boiling-point and melting-point temperatures used in this book corrected or uncorrected?"

This is important. The difference between the corrected and the uncorrected temperatures amounts to considerable, especially at high temperatures, and should be taken into account.

In determining such common constants as specific gravities, melting-points or boiling-points, etc., it is surprising what varying results are frequently reported. This, of course, is due to the different methods employed. It would be an easy matter to state that the melting-point of acetanilid should be taken by means of a capillary tube, giving rate of rise of temperature per unit of time, or to say that the melting-point of beeswax is to be taken by Pohl's method, describing it.

Again, there would be much satisfaction when turning to spermaceti to find that its specific gravity is so, or so, taken at the boiling-point of water compared with water at 15° C., or to find that the specific gravity of beeswax is to be determined by the "suspensory method."

Another point in this connection ought to be carefully considered and that is, whether or not it would not be of considerable convenience to give the specific gravities of fluids at not only 15° C., but 25° C. also. The writer has frequently experienced much difficulty in adjusting the temperature to 15° C. during warm weather. And after it is adjusted there is much danger of the atmospheric moisture condensing on the cool external surface of the picnometer and thus vitiating the results. It is practically impossible to keep the atmosphere within the balance sufficiently dry to obviate this difficulty.

The writer does not wish to find fault with anything in the Pharmacopœia of a progressive nature, but it does seem that it is far more important to include in the next Pharmacopœia concise methods for determining the melting-points, specific gravities, etc., of certain substances, than to devote so much space to volumetric work. There is only one way of making up a volumetric solution, and if it is necessary to sacrifice something to economize space, omit that, concerning which there is absolutely no question about its uniformity.

But is it necessary to give up some of the volumetric directions? The writer does not think so. On looking over the Pharmacopœia we frequently find repeated expressions like the following: "The solution (5 per cent.) should not effervesce on the addition of an

acid (absence of carbonate)." "Another portion of the filtrate should remain clear on the addition of a few drops of silver nitrate T.S. (absence of chlorides)." "The aqueous solution (2 per cent.) acidulated with nitric acid should not afford more than a slight opalescence with barium chloride T.S. (limit of sulphate)." And similar ones are found for testing for the presence or absence of other substances of the same character.

Now, there is only one test for carbonates or chlorides or sulphates under normal conditions. Why, then, make these useless repetitions again and again on the pages of the Pharmacopœia? Why not collect such instructions in the latter part of the book, as has been done in the last edition of the British Pharmacopœia, and give them once for all? Whenever a case is met with where special directions are necessary to arrive at the proper conclusions, then and there, and there only, give them.

Some one says the object of the committee was to make each set of tests complete in itself, therefore these many repetitions. If there were a large number of volumes, such a reason would be very good, but hardly for one volume. It is easy to turn to the tests in their proper places if the Pharmacopœia is known to the worker at all.

Remarks, comments and suggestions similar to those contained in the foregoing pages could be greatly multiplied, but it would appear that sufficient has been said to properly present the actual condition of affairs. It is a very easy thing to have or frame high ideals, and it is eminently desirable to strive for them, but, inasmuch as it is impracticable to attain them at present, in many cases, it would be far better to establish such standards as the progress of chemistry, pharmacy and botany warrants and therapeutics needs.

The Committee of Revision should keep in mind the object of the Pharmacopœia, and not simply because this or that commission has extended or refined certain tests strive to outdo some one else in the matter of raising certain standards. It should also remember that whether the standards set are high or low there are always those who are ever ready to pronounce the latest revision decidedly superior to and better than all previous editions.

MALABAR KINO contains, according to David Hooper (*Pharm. Jour.*, 1900, p. 226), from 80·2 to 96·5 per cent. of tannin on dry substance.

A FEW REMARKS ON, AND WORKING FORMULAS FOR, THE OFFICIAL AND OTHER PREPARATIONS OF SOAP.

By M. I. Wilbert, Ph.G.,
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Few preparations have been more liberally discussed, and few give the working pharmacist more annoyance than do the official preparations of soap. We need offer no apology, therefore, for adding this contribution to the numerous and varied ideas and opinions that have been published.

Sapo Mollis: Those of us who have had occasion to make this preparation according to the directions of the Pharmacopœia will readily recall the trouble that it occasions, the time that is required, and the amount of stirring that is necessary before the mixture of alkali, water and oil begins to saponify.

In hospital practice, and especially in a hospital doing much surgical work, this preparation is used very extensively. Having occasion to supply relatively large quantities of green soap, to be used for various purposes, we soon discovered that the official formula required more than a reasonable amount of time and attention. Time, especially when it must be devoted exclusively to any one thing, is rather too valuable; and it was with the idea of trying to overcome this necessary close application that we began experimenting so as to, if possible, simplify the necessary technique.

If we stop to consider what we desire to accomplish, by the application of heat and the constant stirring of the mixture of alkali, oil and water, we will readily see that it is the more or less intimate mixing of the oil with the aqueous solution of the alkali, so as to allow the latter to act on the former under the most favorable conditions.

To reproduce this, or approximate an equally favorable condition, we finally decided on the following formula and method of procedure:

Green soap	250
Linseed oil	2,000
Potassa (90 per cent.)	450
Alcohol	200
Distilled water	2,250

To the alcohol, in a good-sized vessel, add the green soap and allow to dissolve, then add 1,250 c.c. of water and dissolve the alkali

in this mixture; now gradually add the oil, stirring constantly, the idea being to make an emulsion by means of the added green soap. After the oil has been added, allow the mixture to stand for some time, so that the strong alkali solution may react with some of the oil. After standing an hour or two, gradually add the remaining portion of water, constantly stirring to avoid breaking the emulsion. After all the water has been added, it will be necessary to stir the mixture occasionally, to prevent its separating; in the course of another hour or two the mixture will be stiff enough to stand without further attention. It will take from twelve to twenty-four hours before the oil is perfectly saponified, depending largely on the care exercised in making the emulsion and also on the temperature of the room. The actual time necessary to look after the making of this preparation need not exceed fifteen or twenty minutes; no heat is required, consequently there is no danger from fire. The risk involved in bringing a pot of linseed oil to a boil over an open fire is readily recognized and admitted, and for this one reason alone it would be advisable to dispense with the boiling process, if possible. Add to this the saving of time and the practical impossibility of spoiling a batch by carelessness, it will readily appeal to all that this process has much to recommend it to the working pharmacist.

Liquid Antiseptic Soap: Partly with the idea of preventing unnecessary waste of green soap and partly to offer the surgeon something more efficient and at the same time more convenient and better adapted for preparing the field of operation, as well as the hands of the operator and his assistants, the following formula was devised:

Green soap	1,500
Alcohol	700
Water	50
Cresylic acid	100
Carbolic acid	50

It will be noted that this is practically the Linimentum Saponis Mollis of the Pharmacopœia, with the addition of cresylic and carbolic acids, and the omission of the oil of lavender. This mixture has been in use for more than two years, and has found much favor not only with the surgeons, but also with others, and especially with the pathologists, who are constantly exposed to the most virulent

infections, to say nothing of the disagreeable, persistent and clinging odors that accompany the performance of much of their work. This preparation has been found particularly efficient as a detergent and as a deodorant in counteracting the persistent and penetrating odor of carcinomatous tissues.

It is advisable to dispense this preparation in glass-stoppered vials with the caution to have the hands well wetted before applying the soap.

Cresol Emulsion: This is another preparation that is used quite extensively with us as a substitute for a well-known proprietary article, sold under the trade name of "Lysol."

Green soap	250
Resin soap	100
Alcohol	150
Cresylic acid	450

The resin soap is made with common resin instead of linseed oil, and is added here to give this preparation a distinctive character, so as to distinguish it from the antiseptic soap described above.

Cresol emulsion is used in solutions of from 1 to 5 per cent. as an antiseptic, and for cleaning and sterilizing instruments, utensils, furniture and a hundred and one things that will stand washing with soap and water. It is also a cheap and at the same time a most efficient disinfectant.

Soap Liniment: The present formula for this popular liniment does not seem to meet with much popular approval, the bone of contention being of course the soap. Powdered soap is not only expensive, but often unreliable and certainly does not keep well in the powdered state. Having an undesirable but well-developed affinity for water, it soon becomes soggy and lumpy, and of course in this shape it does not at all come up to the requirements that are made for powdered soap by the Pharmacopœia.

The 1880 formula, while preferable in many respects, also had its deficiencies, chief among them being the tendency that soap has of becoming extremely hard when dry. This hardness not only makes it rather hard to cut, it also seems to interfere very materially with solution, a hard dry soap taking very much longer to dissolve than does a fresh or green soap.

To get over the many petty annoyances connected with the making of soap liniment and to have at the same time a means of

preparing this liniment extemporaneously, or at least at very short notice, it occurred to us that a soap might be made directly, from materials of known purity, thus insuring from the very first an element of positive knowledge as to the ingredients entering into the preparation.

The following formula has proven quite satisfactory, is easily followed, requires little time and very little attention.

Liquid Soda Soap: This is the stock solution or (stock-pot):

Liquid soda soap	200
Cotton seed oil	1,125
Sodium hydrate (90 per cent.)	175
Alcohol	1,250
Water	1,250

The liquid soda soap in this case is only added to facilitate the process of saponification. It is not essential, however, as the mixture, owing to the presence of a comparatively large amount of alcohol, readily saponifies.

The technique ordinarily followed is as follows: To the liquid soda soap in a large bottle add about 250 parts of alcohol and 750 of water, shake well and add the sodium hydrate, and allow it to dissolve; then gradually add the oil, shaking or stirring the mixture constantly; after the oil has been added, add the remaining portion of alcohol, and finally the water.

The resulting product should be light golden yellow in color, perfectly clear, transparent and limpid, mixing readily with alcohol, glycerin or carbolic acid without precipitation.

Soap Liniment: To make this preparation use:

Liquid soda soap	1,600
Camphor	360
Oil of rosemary	80
Alcohol	5,500
Water, to make	8,000

Dissolve the oil of rosemary and camphor in the alcohol, add the liquid soda soap, and finally the water. The whole process does not require more than a few minutes, and gives a product that stands well in all weather, not precipitating or becoming solid even at comparatively low temperatures.

THE AMERICAN PHARMACEUTICAL ASSOCIATION will hold its forty-eighth annual meeting in Richmond, Va., beginning May 7th.

SYRUPUS HYPOPHOSPHITUM.

By F. W. Haussmann.

Recommendations for improving this syrup may be briefly summed up as follows: (1) Increase in the amount of sugar. The Pharmacopœia directs 500 grammes in 1,000 c.c. of syrup. This is obviously insufficient, and should be increased to 700 grammes. (2) Increase in the amount of diluted hypophosphorous acid.

The Pharmacopœia directs 2 grammes of diluted 10 per cent. acid. This amount is insufficient to keep the calcium hypophosphite in solution. It has frequently been the writer's experience that precipitation takes place in the syrup which may be prevented by an increase of acid. If 2 grammes of the commercial 50 per cent. acid or 10 grammes of the 10 per cent. are used, a syrup less liable to deposit can be prepared. The property of the acid to increase the solubility of the calcium salt brings us to the third suggestion, a slight change in the manipulation in making the aqueous solution of the salt. The directions of the Pharmacopœia are as follows: Triturate the hypophosphites with 450 c.c. of water until they are dissolved, add the spirit of lemon and the hypophosphorous acid and filter the liquid.

Commercial calcium hypophosphite invariably leaves an insoluble residue when triturated with water. The addition of hypophosphorous acid increases the solubility of the calcium hypophosphite, and the directions should therefore read as follows: Triturate the hypophosphites with 350 c.c. of water, allow the undissolved portion to settle and pour off the clear solution. To the residue add the hypophosphorous acid, triturate until it is dissolved, mix the liquids, add the spirit of lemon and filter. In the filtrate dissolve the sugar by agitation without heat and strain.

In the writer's experience percolation furnishes a clearer syrup than if prepared by agitation. Incidentally it may be mentioned that the syrup sometimes acquires a terebinthinate odor, due to the oxidation of the lemon oil in the spirit.

In view of the points mentioned, the following formula is proposed for the syrup:

SYRUPUS HYPOPHOSPHITUM.

Calcium hypophosphite	45 grammes.
Potassium hypophosphite	15 "
Sodium hypophosphite	15 "

Diluted hypophosphorous acid	10 grammes.
Sugar	700 "
Spirit of lemon	5 c.c.
Water, a sufficient quantity to make	1,000 c.c.

Triturate the hypophosphites with 350 c.c. of water and allow the undissolved portion to settle.

Pour off the clear solution, and to the residue add the diluted hypophosphorous acid and triturate until solution is effected.

Mix the liquids, add the spirit of lemon and filter. In the filtrate dissolve the sugar by agitation without heat, and add enough water through the filter to make the product measure 1,000 c.c.

Strain if necessary. The alternative process of percolation, as directed by the present Pharmacopœia, should be included in the official formula.

SYRUPUS FERRI IODIDI.

By F. W. Haussmann.

The experiments conducted were with the view of preparing a syrup of greater permanence. It is well known that the present official formula yields a less satisfactory syrup than the one of the 1880 Pharmacopœia. This is undoubtedly due to a deficiency in the amount of sugar, and several writers have pointed to the necessity of an increase.

Recently the importance of adding sugar to the solution of ferrous iodide, before mixing with the syrup or solution of the sugar, has been recognized. In preparing the syrup by the process of the 1880 Pharmacopœia, the necessity of a sugar addition becomes apparent. This formula omits directions to heat the iron solution to boiling and the washings are also directed to be made with cold distilled water. The washings are frequently cloudy and the finished syrup will lack transparency.

The presence of sugar in the iron solution prevents this cloudiness and the present Pharmacopœia very properly directs the washing to be done with a hot mixture of syrup and water.

This somewhat tedious method may be improved by diluting the solution of ferrous iodide, after reaction has ceased, with water to its full limit, heating it to boiling, adding a small amount of sugar

and filtering the hot mixture into syrup or upon sugar as the case may be. The latter, in view of the necessity of increasing the density of the syrup, is the preferable method.

To maintain stability of syrup of iodide of iron the addition of hypophosphorous acid has been highly recommended. Citric and hydriodic acid have also been proposed. The experiments of the writer have been conducted solely with hypophosphorous acid, a number of trials being made to determine the amount necessary to prevent discoloration of the syrup.

The addition of ·1 to ·2 ($\frac{1}{10}$ to $\frac{1}{5}$) per cent. has preserved a sugar-prepared syrup during two months. The following formula, for which no originality is claimed, is based upon the points mentioned. It is similar to the formula of Dr. Dohme, as presented to the Maryland Pharmaceutical Association and published in the Proceedings of the American Pharmaceutical Association of 1898.

The formula as published, probably inadvertently, directs the syrup to be made up to 1,000 c.c. where that number of grammes should be ordered.

SYRUPUS FERRI IODIDI.

Iron, in the form of bright wire and cut into small pieces,	25 grammes.
Iodine	83 "
Sugar, in coarse powder	600 "
Diluted hypophosphorous acid	20 "
Distilled water, a sufficient quantity to make	1,000 grammes.

Introduce the iron into a flask of thin glass, having a capacity of 500 c.c., add to it 200 c.c. of distilled water and afterwards the iodine. Shake the mixture occasionally, checking the reaction if necessary by the affusion of cold water, and, when the solution has acquired a greenish color and has lost the odor of iodine, dilute it with 75 c.c. of water and heat it to boiling. To the boiling solution add 25 grammes of sugar, and filter it through a strong, double, rapidly-acting filter placed in a funnel upon the rest of the sugar placed in a porcelain capsule.

Stir the mixture with a glass rod, heat it to the boiling point, and, having strained the syrup through linen into a tared bottle, add the hypophosphorous acid and enough distilled water to make the product weigh 1,000 grammes.

Lastly, shake the bottle and transfer the syrup to small vials, which should be completely filled.

SYRUPUS FERRI QUININÆ ET STRYCHNINÆ PHOSPHATUM.

By F. W. Haussmann.

Easton's syrup has received a great deal of criticism from various sources. To British pharmacists it appears to be the source of considerable difficulty, and much of the knowledge pertaining to the syrup is the result of their painstaking investigations.

In a previous paper attention was called to the influence which acids exert upon official syrups, and this preparation was one of those mentioned.

The difficulty with Easton's syrup is the one common to all, namely, darkening due to caramelization.

This cannot be avoided as long as an excessive amount of free acid is present, and if the quantities of the original Aitkins' formula are adhered to a permanent syrup, as far as stability of color is concerned, is impossible.

To the pharmacists of the United States the present official formula is of sole importance. The Pharmacopœia of 1880 directs the syrup to be prepared directly from sugar, while the present edition, with the view of saving time, directs admixture of the concentrated solution of active ingredients to simple syrup. In either case the syrup will turn dark on standing. The various statements of the influence of light, the recommendation of keeping the syrup in a cool place and in amber-colored bottles, and similar suggestions, while possibly retarding, will not prevent this change.

Aside from this, the official formula is open to criticism in several minor respects. The Pharmacopœia directs the soluble ferric phosphate to be heated with water in a capsule until it is dissolved. The acid is now directed to be added, also the quinine sulphate and strychnine, and the mixture stirred until dissolved. No mention is made if the heat is to be continued or not. If solution is expected to take place without continuation of a gentle heat, the operator will be disappointed, as perfect solution will not take place.

The next step is the direction to filter the iron alkaloidal solution into the glycerin. This solution is a thick syrupy liquid, and much difficulty will be experienced in the attempt.

The necessity for filtration is not apparent, as, if carefully manipulated, a fairly clear solution will be obtained. Directions for filtering may therefore be omitted.

The writer would recommend substitution of quinine hydrochlorate for the sulphate, as solution takes place more readily in the acid mixture and continuation of heat may be dispensed with.

In comparing the present formula with the one of the 1880 Pharmacopœia, no preference can be given to either. Excepting the point mentioned regarding filtration of the alkaloidal solution, the present process requires less time.

Being acquainted with its cause, the only logical course to prevent discoloration appears to be to decrease the amount of phosphoric acid.

Calculated to weight, the amount of official 85 per cent. phosphoric acid is 8·2 grammes in 100 c.c., or, expressed in apothecary weight, 5 grains to 1 fluiddrachm. The attempt to reduce the amount of acid with the view of preparing a permanent syrup will meet with failure. If one-half of the amount, 24 c.c. in 1,000 c.c., or approximate quantities are employed, precipitation of the alkaloidal salts takes place, resulting in a cloudy preparation.

This will be the case no matter how the formula is manipulated, either in the case of simple admixture or dissolving the sugar in a diluted iron alkaloidal solution, or if quinine hydrochlorate is substituted for the sulphate.

It may be gleaned from the above results that the difficulties with this preparation are manifold, and under existing conditions it is impossible to suggest a remedy. It is, however, an open question if to American pharmacists a reliable formula for a compound syrup of the hypophosphites, containing iron, quinine and strychnine, which would enjoy the confidence of physicians, would not be a desirable substitute for this comparatively obsolete preparation.

A CHEMICAL CLASSIFICATION OF ODORIFEROUS PRINCIPLES.

By Samuel P. Sadtler.[1]

One of the most satisfactory and complete attempts at the classification not only of the numerous constituents of the natural essential oils, but of the various chemical substances that enter into the composition of perfumes, natural and artificial, has been recently put forward by Dr. Erdmann, in a lecture before a section of the Association of German Chemists.

[1] A translation with notes from the German of Ernst Erdmann (*Zeits. für angewandten Chemie*, 1900, pp. 103–116).

So much has been added to our knowledge of the essential oils in recent years, and so much has been done in the line of synthetic work in this domain, that a survey of the whole material from the chemical standpoint is very welcome.

The author points out that we must first of all concede that if a substance is to act upon the olfactory nerves it must be volatile. But all gases do not act upon the sense of smell, and so we must seek for a reason for the activity. He is inclined to believe that it resides in the development of a true chemical reaction between the odoriferous volatile substance and the protoplasmic matter of the cells forming the olfactory nerves. Thus the action of aldehydes, to which class a large number of odoriferous principles belong, upon protein substances has been noted and recently made the basis of a patent application by the Elberfeld Farbenfabrik Co. When two substances of different chemical constitution like nitrobenzene and benzaldehyde seem to possess the same odor, we have an anomaly, but we have similar anomalies in the similarity of taste of cane sugar and saccharine.

The author calls attention, in considering the action of a perfume, to the difference between quality of odor and intensity or penetrating power of the same. The first he considers to be absolutely dependent upon the chemical constitution of the perfume; the second, while somewhat dependent upon chemical nature, is rather connected with its physical properties, such as volatility and special conditions of admixture with air or vapors of other volatile bodies such as, for instance, alcohol.

He divides the distinctive odoriferous principles into seven main groups, viz.: (1) aldehydes; (2) alcohols and esters; (3) ketones; (4) phenols and phenol ethers; (5) acid and acid anhydrides; (6) nitrogenous substances; (7) hydrocarbons.

The first and most important class are the *aldehydes*. The lowest members of this class, the aldehydes of the fatty series, like formaldehyde, acetaldehyde, butyraldehyde, valeraldehyde, are, it is true, found at times in essential oils, but the author does not include them in his list, as they are irritating and unpleasant in odor, contributing in no way to the value of a perfume.

This group includes, as is seen, several interesting substances of artificial or synthetic manufacture, such as citral, benzaldehyde, cinnamic aldehyde, vanillin and piperonal.

The group of *alcohols* and *esters* includes the esters of the lower fatty acids known as "fruit essences," as well as the esters of the unsaturated alcohols geraniol and linalool, which are so characteristic of many of the essential oils.

The group of *ketones* includes camphor and a number of interesting and characteristic principles of essential oils, including the two newest, irone and ionone.

The group of *phenols* and *phenol ethers* includes the well-known eugenol, safrol and anethol, besides thymol and others.

Under the group of *acids* we have benzoic and cinnamic acids, which occur both free and in ester combination, and under *acid anhydrides* we have coumarin.

In the group of *nitrogen-containing perfumes* we have a variety, although none of pre-eminent value.

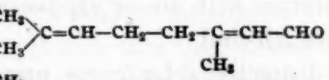
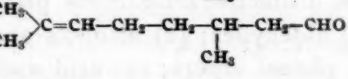
The last group, that of *hydrocarbons*, of course includes the terpenes, which are the basis of many of the most important essential oils.

The tables are given below in full, with names, constitutional formulas, compounds and natural occurrence.

CLASSIFICATION OF THE MOST IMPORTANT DISTINCTIVE PERFUMES.

First Group: Aldehydes.

Nos. 1 to 2, unsaturated, with open chains; No. 3, closed chain; Nos. 4 to 11, closed chain, Benzol series.

No.	Name.	Formula.	Natural Occurrence.
1	Citral		Lemon oil, lemon grass oil.
2	Citronellal (Citronellon)		Citronella oil, lemon oil and eucalyptus maculata.
3	Furfurol		Clove oil.
4	Benzaldehyde	$C_6H_5—CHO$	Bitter almond oil, cherry laurel oil.
5	Phenylacetaldehyde	$C_6H_5—CH_2—CHO$	—
6	Cinnamic aldehyde	$C_6H_5—CH=CH—CHO$	Oils of cassia and cinnamon.
7	Cumin aldehyde	$C_6H_4.C_3H_7.CHO$	Roman chamomile oil.
8	Salicylic aldehyde	$C_6H_4.OH.CHO$	Oil of spiræa and crepis fœtida.
9	Anisic aldehyde (Aubépine)	$C_6H_4.OCH_3.CHO$	—
10	Vanillin	$C_6H_3.OH.OCH_3.CHO$	Vanilla, benzoin, Peru balsam and beet sugar.
11	Heliotropine (Piperonal)	$C_6H_3.OCH_2O.CHO$	Spiræa oil.

Second Group: Alcohols and Esters.

Nos. 1 to 4, saturated, with open chains; Nos. 5 to 7, unsaturated, with open chains; No. 8, closed chain; Nos. 9 to 13, closed chain, Terpene series; Nos. 14 to 15, closed chain, Benzol series.

No	Name and Formula.	Joined to.	Natural Occurrence.
		—	Clove oil.
1	Methyl alcohol CH_3OH	Benzoic acid (Niobe oil).	—
		Salicylic acid (wintergreen oil).	Gaultheria procumbens, betula lenta.
		—	—
		Formic acid (rum essence).	—
		Acetic acid (acetic ether).	Wine vinegar cognac, magnolia fuscata (?)
2	Ethyl alcohol $C_2H_5.OH$	Butyric acid (banana essence).	—
		Isovalerianic acid (apple oil).	—
		Pelargonic acid (artificial cognac essence).	—
		—	Potato fusel oil.
3	Isobutyl alcohol $(CH_3)_2CH-CH_2.OH$	Isobutyric acid.	Roman chamomile oil.
		Angelic acid.	
		—	—
		Acetic acid.	Potato fusel oil.
			Peppermint oil.
4	Isoamyl alcohol $(CH_3)_2CH-CH_2-CH_2.OH$	Isovalerianic acid (apple essence).	—
		Caprylic acid, Capric acid } Onanth-Ether	Cognac oil.
5	Rhodinol (geraniol) $(CH_3)_2C=CH-CH_2-CH_2-C(CH_3)=CH-CH_2.OH$	—	Rose oil, geranium oil, citronella oil, lemon grass oil.
		Acetic acid.	Neroli oil.
6	Linalool $(CH_3)_2C=CH-CH_2-CH_2-C(CH_3)(OH)-CH=CH_2$		Oils of linaloë, bergamot, lavender, neroli, jasmine.
		Acetic acid.	Oils of bergamot and neroli.
7	Citronellol $(CH_3)_2C=CH-CH_2-CH_2-CH(CH_3)-CH_2-CH_2.OH$	—	Rose oil, citronella oil.
8	Furfuryl alcohol $C_4H_3O-CH_2.OH$	—	Coffee oil.
9	Borneol $C_{10}H_{17}.OH$	—	Borneo camphor. Nagai camphor. Rosemary oil.
		Acetic acid.	Pine-needle oil.
		Isovalerianic acid.	Oils of valerian and Japanese valerian.

Second Group: Alcohols and Esters—Continued.

No.	Name and Formula.	Joined to.	Natural Occurrence.
10	Terpineol $C_{10}H_{17}.OH$	—	Cajuput oil, cardamom oil.
11	Menthol $C_{10}H_{19}.OH$	—	Peppermint oil.
12	Eucalyptol (Cineol) $C_{10}H_{18}O$	—	Oil of Satonica. Eucalyptus oil.
13	Peruviol $C_{12}H_{22}O$	—	Balsam of Peru.
14	Benzyl alcohol $C_6H_5—CH_2.OH$	—	Oil of jasmine flowers.
		Acetic acid.	Oil of jasmine flowers.
		Benzoic acid.	Balsam of Peru.
15	Cinnamic alcohol $C_6H_5—CH=CH—CH_2.OH$	—	—
		Cinnamic acid.	Storax.

Third Group: Ketones.

Nos. 1 to 2, saturated, with open chains; Nos. 3 to 4, unsaturated, with open chains; Nos. 5 to 12, closed chain, Terpenes.

No.	Name.	Formula.	Natural Occurrence.
1	Methylamyl ketone	$CH_3—CO—C_5H_{11}$	Clove oil.
2	Methylnonyl ketone	$CH_3—CO—C_9H_{19}$	Rue oil.
3	Methylheptenone	$(CH_3)_2C=CH—CH_2—CH_2—CO—CH_3$	Linaloë oil, lemon grass oil.
4	Pseudojonone	$(CH_3)_2C=CH—CH_2—CH_2—C(CH_3)=CH—CH=CH—CO—CH_3$	
5	Carvone	$C_{10}H_{14}O$	Caraway oil.
6	Camphor of Laurinæ (Camphor)	$CH_3—C<(CH_2—CH_2—C(CH_3)_2—CH)$, CO	Camphor wood.
7	Fenchone	$C_{10}H_{16}O$	Fennel oil, thuja oil.
8	Thujone (Tanacetone)	$C_{10}H_{16}O$	Thuja, tansy oil, absinthium oil.
9	Pulegone	$C_{10}H_{16}O$	Oil of pennyroyal.
10	Menthone	$C_{10}H_{18}O$	Peppermint oil.
11	Irone	$C_{13}H_{20}O$	Orris root. Violet root.
12	Ionone	$CH_3.C(CH_3)_2—CH_2—CH_2—C(CH_3)=CH—CH=CH—CO—CH_3$	

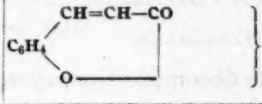
Fourth Group: Phenols and Phenol Ethers.

Nos. 1 to 9, Benzol series; No. 10, Naphtaline series.

No.	Name.	Formula.	Natural Occurrence.
1	p-Cresol methyl ether	$C_6H_4.OCH_3.CH_3$	Ylang-ylang oil.
2	Guaiacol	$C_6H_4.OCH_3.OH$	Birch oil, beechwood tar.
3	Creosol	$C_6H_3.OH\ OCH_3.CH_3$	Birch oil.
4	Anethol	$C_6H_4.OCH_3\ CH{=}CH{-}CH_3$	Anise oil, star anise oil, fennel oil.
5	Chavicol	$C_6H_4.OH.CH_2{-}CH{=}CH_2$	Betel oil.
6	Estragol	$C_6H_4.OCH_3.CH_2{-}CH{=}CH_2$	Estragon oil.
7	Thymol	$C_6H_3.C_3H_7.OH.CH_3$	Thyme oil.
8	Eugenol	$C_6H_3.OH.OCH_3.CH_2{-}CH{=}CH_2$	Clove oil.
9	Safrol	$C_6H_3.OCH_2O.CH_2{-}CH{=}CH_2$	Sassafras oil, camphor oil.
10	β-Naphtol methyl ether (Nerolin)	$C_{10}H_7.OCH_3$	

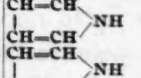
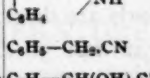
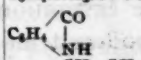
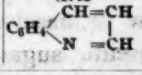
Fifth Group: Acids and Acid Anhydrides.

Nos. 1 to 2, unsaturated, with open chain; Nos. 3 to 5, closed chain, Benzol series.

No.	Name.	Constitutional Formulæ.	Natural Occurrence.
1	Angelic acid	$CH_2{=}CH{-}CH(CH_3){-}COOH$	As an ester in Roman chamomile oil.
2	Tiglic acid	$CH_3{-}CH{=}C(CH_3){-}COOH$	As an ester in Roman chamomile oil and croton oil.
3	Benzoic acid	$C_6H_5{-}COOH$	Balsam of Peru, benzoin and Tolu balsam.
4	Cinnamic acid	$C_6H_5{-}CH{=}CH{-}COOH$	Balsam of Peru, Tolu balsam, benzoin (Sumatra), storax.
5	Coumarin		Tonca bean, wood-roof (asperula odorata).

Sixth Group: Nitrogen-containing Perfumes.

Nos. 1 to 3, with open chains; No. 4, closed chain; Nos. 5 to 12, closed chain, Benzol series.

No.	Name.	Formula.	Natural Occurrence.
1	Trimethylamine	$N(CH_3)_3$	Oil of chenopodium.
2	Hydrocyanic acid	CNH	Bitter almond oil, cherry laurel oil.
3	Allyl mustard oil	$C_3H_5.NCS$	Mustard oil, horseradish, aria officinalis.
4	Pyrrol		As a derivative in orange oil from unripe fruits.
5	Indol		Jasmine oil.
6	Phenyl acetic acid nitrile (Benzyl-cyanide)	$C_6H_5{-}CH_2.CN$	Cress oil (Lepidium sativum, Tropæolum majus).
7	Mandelic acid nitrile	$C_6H_5{-}CH(OH).CN$	Almond oil.
8	Nitrobenzol (Mirbane oil)	$C_6H_5NO_2$	—
9	Tonquinol (Musk Baur)	$C_6H.(NO_2)_3.C_4H_9.CH_3$	—
10	Anthranilic acid methyl ester	$C_6H_4.NH_2.COOCH_3$	Neroli, jasmine oil.
11	Anthranil		—
12	Quinoline		—

Seventh Group: Hydrocarbons.

Nos. 1 to 10, closed chain, Terpene series; Nos. 11 to 12, closed chain, Benzol series.

No.	Name.	Formula.	Natural Occurrence.
1	Pinene	$C_{10}H_{16}$	{d[1]: German turpentine oil, American turpentine oil; l: French turpentine oil.
2	Camphene	$C_{10}H_{16}$	{d: Ginger and spike oils; l: oils of citronella and valerian.
3	Fenchene	$C_{10}H_{16}$	French turpentine oil (?)
4	Limonene	$C_{10}H_{16}$	{d: Oils of orange peel, lemon and bergamot; l: fir oil; i: (dipentene); camphor oil.
5	Sylvestrene	$C_{10}H_{16}$	{Swedish and Russian turpentine oil.
6	Phellandrene	$C_{10}H_{16}$	{d: Water yarrow oil; elemi oil; l: Australian eucalyptus oil.
7	Terpinene	$C_{10}H_{16}$	Cardamom oil.
8	Terpinolene	$C_{10}H_{16}$	—
9	Cadinene	$C_{15}H_{24}$	Oil of cade.
10	Caryophyllene	$C_{15}H_{24}$	Clove oil.
11	Cymol	$C_6H_4.CH_3.C_3H_7$	{Oil of cuminum cyminum, thyme oil.
12	Styrol	$C_6H_5-CH=CH_2$	Storax.

[1]d = dextrorotatory; l = lævorotatory; i = inactive.

SYRUPUS AMYGDALÆ.

By F. W. Haussmann.

On account of the liability of decomposition, syrup of almond is best prepared recently, although such is not stated specifically by the Pharmacopœia. For extemporaneous preparation the present official formula is more suitable than those of former editions. The official directions are, however, liable to cause confusion in several respects.

In the summary of the quantities, 200 c.c. of water are ordered, whereas in the directions for manipulation 330 c.c. are used. The final measure is directed to be made up to 1,000 c.c. with *water*, where syrup is obviously intended. A point in the directions may also be called attention to. The almonds are directed to be rubbed in a mortar with 100 grammes of sugar and 30 c.c. of water to a smooth paste. With the given amount of water only a mass can be obtained and the quantity used for trituration should be increased.

In comparison with the formula of the 1880 Pharmacopœia, the present one is to be preferred. While trituration of the almonds with a larger quantity of water may produce a more perfect emulsion, cohesion is destroyed if the sugar is dissolved by agitation. Continental pharmacopœias direct a greater sugar percentage and

solution by heat. Syrups thus prepared do not possess the milky whiteness of the U.S.P. preparation, and in point of stability have apparently little advantage.

Perhaps worthy of mention is syrup of almond as proposed by Dieterich, which contains 5 per cent. of acacia and is prepared by heat. For counter sale this formula is claimed to furnish a permanent preparation.

The syrup of the United States Pharmacopœia separates on standing. To increase stability, a quantity of granulated acacia may be employed while preparing the emulsion. Gum arabic is used in preparing emulsion of almonds and should not be objectionable in the syrup.

The syrup prepared by the following formula does not separate as readily as the official preparation.

SYRUPUS AMYGDALÆ.

Sweet almond	140 grammes.
Bitter almond	40 "
Acacia, in granular powder	10 "
Sugar	200 "
Orange-flower water	100 c.c.
Water	300 "

Syrup, a sufficient quantity to make the syrup measure 1,000 c.c.

Rub the almonds, previously blanched, in a mortar, with the acacia and 100 grammes of sugar, and 50 c.c. of water to a smooth paste. Mix this well with the orange-flower water and 100 c.c. of water and strain with strong expression. To the residue add 150 c.c. of water and express again. In the strained liquid dissolve the remainder of the sugar without heat and add a sufficient quantity of syrup to make the product measure 1,000 c.c. Mix thoroughly.

RECENT LITERATURE RELATING TO PHARMACY.

CONSTITUENTS OF TOBACCO SMOKE.

At a recent meeting of the German Scientists' Association, Professor Thoms read a paper on tobacco smoke (*Suddtsch. Ap. Zt.*, 1899, 650). It is an interesting account of a careful investigation, the greater part being performed with the smoke of artificially aspirated cigars. Omitting details, the sulphuric acid through which the smoke passed contained *nicotine*, *ammonia* and *pyridine*; to solution

of soda in the second wash bottle, the smoke gave up *carbonic* and *butyric acids*, but no hydrocyanic acid; while traces of a *volatile oil* and of *carbon monoxide* were likewise detected in the smoke.

That the pyridine was a decomposition product of the nicotine was shown by the fact that the smoke from the cigars from which the nicotine was removed yielded no pyridine. It is interesting to note that the cigar "stump" contained a much larger percentage of nicotine than did the whole cigar. Thus twenty cigars weighing 78 grammes contained 1·12 per cent. nicotine; while the stumps from same, weighing 4·57 grammes, contained 4·34 per cent. The carbon monoxide in the smoke from 1 kilo tobacco, estimated by precipitation of palladium chloride solution, amounted to but 20 c.c.

It was found that if 15 kilos tobacco was distilled with steam, 6 grammes of a green, oxygenated, phenol-bearing oil was obtained. On the other hand, from the smoke of 20 kilos tobacco there was separated 75 grammes dark brown oil, so irritating and malodorous that work with it was very trying. It consisted of a trace of pyridine, a phenol boiling at 190°–200°, a small quantity of furfurol and a residue boiling at 200°–260°, containing sulphur and nitrogen and no terpenes. H. V. A.

BETULIN.

C. J. Reichart (*Ph. Cent.*, 1899, 587) reports on a dye-stuff obtained from the bark of Betula alba, by cooking bark in alkali and precipitating with hydrochloric acid. The yield is 20 per cent. and the product is a red-brown powder, soluble in alcohol and hot glycerin.

He has patented the product and recommends it for tinting cosmetics and the like, the shade produced being red-brown to rose, according to amount employed. It is precipitated from solution by acids, quinine sulphate and lead acetate, and, as ferric chloride colors it green-black, it is presumably a tannoid. H. V. A.

NOTES ON HONEY.

Supplemental to his previous work on honey, Dr. Haenle (*Ph. Zt.*, 1899, 742) contributes some interesting notes.

Bees fed exclusively on a 33 per cent. sugar solution, the polarization angle of which was +96°, yielded a honey containing dextrin and polarizing at —3°. Curiously enough, the same sugar solution,

inverted by tartaric acid to —13°, yielded a similar but dextrin-free honey, likewise polarizing at —3°. The same bees, allowed freedom, deposited a natural dextrin-free honey polarizing at —35°. The writer noticed that his bees brought honey in August—practically at the close of flowering time—and, seeking cause, traced the insects to a neighboring preserve factory. Here the insects sought their supplies from the fresh fruit rather than from the abundant sugar, showing their preference to invert sugar.

The honey from this source contained traces of dextrin and polarized at —12° to —15°. The article closes with a report on examination of a commercial honey made from equal parts of natural honey and pure inverted sugar. Such sophistications can be easily detected, since they polarize at about —50°.

NORWEGIAN TAR.

Dr. K. Strom (*Arch. Pharm.*, 1899, 525) reports a careful examination of the tar of Pinus sylvestris. By fractional distillation and by chemical separation and identification, he finds the tar contains 4·75 per cent. volatile acids, 10·94 per cent. phenols and 60·80 per cent. hydrocarbons. The acids found were formic, acetic, propionic, normal butyric, normal and Reynard's valerianic, methyl propyl acetic, normal capronic, œnanthic and caprylic and possibly pelargonic, caprinic and pimaric; while the phenols were cresol, guaiacol creosol, ethyl-guaiacol, propyl guaiacol, and two bodies, $C_{11}H_{16}O_2$ and $C_{12}H_{14}O_2$. The hydrocarbons are very numerous and difficultly separable. The most noteworthy of these is retene, $C_{18}H_{18}$.

H. V. A.

THE SUGARS IN CAROB SEED DURING GERMINATION.

E. Bourquelot and H. Hérissey, *Comp. rend.*, *129*, 614, have shown that there is developed, during germination of the separated embryos, a soluble ferment, which, acting on the albumen of the seed, produces a reducing sugar; 250 grammes of the seed yielded nearly 7 grammes of the sugar, which proved to consist of mannose and galactose, in the proportion of about 4 to 1.

L. F. K.

ANALYSIS OF ASAFETIDA.

Mr. Russell W. Moore, *J. Soc. Chem. Ind.* (1899), *18*, 987, gives the per cent. of resin content of 164 samples of asafetida. Only

six out of this number contained above 45 per cent. of resin. The samples were taken from asafetida considered to be deficient in percentage content of resin. The articles of high quality were not sampled, consequently very guarded conclusions must be drawn.

L. F. K.

METHYL ALCOHOL, FURFUROL AND DIACETYL IN CARAWAY RUNNINGS.

It has been found that the first runnings of water during the process of distilling caraway oil from the seed contain, as is the case with cloves, methyl alcohol and furfurol. In both cases the methyl alcohol is colored intensely yellow. This coloration cannot be removed by distillation. From certain reactions this body is considered diacetyl.—*Schimmel's Report*, Oct., 1899, p. 11.

L. F. K.

THE ELECTROLYTIC PREPARATION OF CHLOROFORM.

L. Zambelletti-Mailand has established a plant at Como for manufacturing chloroform by an electrolytic process. A 20 per cent. sodium chloride solution is placed in a lead-lined still, provided with a rotating carbon shovel, which serves the double purpose of an agitator and an anode. The still is heated by steam. An electric current of from 5 to 6 ampères is passed, and when the temperature reaches 100° C., acetone is slowly introduced from the bottom. The nascent chlorine developed acts on the acetone, forming first trichlor-acetone, which is next broken up by the sodium hydrate produced into chloroform and sodium acetate. Theoretically, 100 pounds of acetone should yield 210 pounds of chloroform, but thus far only 180 pounds have been obtained in practice.—V. Lucchini, *L'Elettricita*, 1899, *8*, 664; through *Chem. Zeit.* (*Rep.*), 1899, Vol. 23, p. 336.

L. F. K.

BECCHI REACTION FOR COTTON-SEED OIL.

The presence of sulphur in cotton-seed oil has been considered doubtful. Soltsien found that oil obtained by the medium of petroleum spirits did contain sulphur, but cold expressed oil gave a doubtful reaction for sulphur.

Becchi's reaction is due not only to the reduction of the silver, but also to the production of silver sulphide, if sulphur is present. —P. Soltsien, *Ztsch. öffentl. Chem.*, *5*, 306; from *Chem. Centralblatt* (1899), *2*, 539.

L. F. K.

DETERMINATION OF VANILLIN IN VANILLA.

Mr. Busse removed and estimated the vanillin by the usual method: extraction with ether, removal from the ethereal extractive by means of sodium bisulphite, etc.

Tiemann and Haarmann found:

	Per Cent. of Vanillin.
Best Mexican bean to contain from	1·69 to 1·86
Bourbon variety contained from	1·91 to 2·90
Java bean contained	2·75

The author found:

German E. African vanilla to contain	2·16
Ceylon " " "	1·48
Tahiti " " "	1·55 to 2·02

There does not appear to be any relation between the amount of vanillin present in a bean and its value as a flavoring agent, since the most aromatic and best flavored vanilla frequently contains less vanillin than a vanilla of inferior quality. The aroma and flavor are, therefore, not entirely due to vanillin.—*Arb. Kaiserl. Ges.* (1898), *15*, 1; through *J. Soc. Chem. Ind.*, *18*, 952. L. F. K.

THE ANALYSIS OF LUPULIN.

Hager's "Kommentar," second edition states that lupulin should not contain more than 10 per cent. of ash and yield at least 70 per cent. of ether extractive. The U.S.P. prescribes a limit of 10 per cent. of ash, but the B.P. allows 15 per cent.

Mr. R. W. Moore prefers drying and weighing the residue to drying the extractive and weighing it; because the latter procedure always occasions loss, by volatilization of the more fugitive bodies. The analytical results of twenty-five samples are given; of these only *two* contained less than 10 per cent. of ash and twelve contained more than 70 per cent. of extractive. There does not appear to be any ratio between ash content and ethereal extractive. The old and inferior lupulin contained less ash than the article of superior quality. This is due to the fact that new lupulin is very sticky, causing the adhesion of much more foreign matter than the old. From these analyses it would appear that 15 per cent. of ash would be more nearly correct than 10 per cent., as is now required.—*J. Chem. Soc. Ind.* (1899), *18*, 987. L. F. K.

PREPARATION OF VERMUTH IN EUROPE.

In France the production of vermuth is almost entirely confined to Marseilles. It is an infusion of bitter, aromatic plants, herbs and roots in a good white wine (generally fortified). The ingredients are almost legion, and the number of formulæ are almost unlimited, each manufacturer using a private combination.

Italy is the largest producer of vermuth, and the most highly esteemed is made in and around Turin. On a large scale, vermuth is made by preparing an alcoholic extract of the herbs by digesting them in 95 per cent. alcohol at 120° F. for eight days, then warming to a moderate degree over a slow fire for twelve hours, finally press the solid ingredients and filter. The filtered liquid is added to the wine as desired. The alcoholic strength of vermuth lies between 15 per cent. and 17 per cent.

The following formula serves as an example of the ingredients employed in making the extract: alcohol, 90 per cent., 8 litres; coriander seed, 800 grammes; nutmeg, Greek nuts, Peruvian bark and sweet flag, each, 200 grammes; wormwood, sharp, and Roman wormwood, each, 720 grammes; sweet marjoram and yarrow, each, 180 grammes; rose leaves, cloves and Ceylon cinnamon, each, 100 grammes; dittany and sem. angelica, each, 50 grammes; and hyssop, 150 grammes.—*U. S. Consular Reports*, 1899, *60* (227), 599.

L. F. K.

PHILADELPHIA HOSPITAL FORMULARY.

[*Continued from page 182.*]

Liquor Hydrargyri Chloridi Corrosivi.

(1-2000, 1-1500, 1-1000.)

Liquor Hydrargyri Chloridi Corrosivi Fortior (1-8).

Mercuric Chloride, Cor.	6 dr.	24 gm.
Ammon. Chloride	4 dr.	16 gm.
Water, Distilled, to measure	6 fl. oz.	180 c.c.

One teaspoonful added to one pint of water yields a 1-1000 solution of Corrosive Mercuric Chloride.

Liquor Lithii Bromidi.

Each teaspoonful contains:

Lithium Bromide	7·5 gr.	0·5 gm.
Solution, Potass. Citrat.	30 m.	2 c.c.
Water, Peppermint, to measure	1 fl. dr.	4 c.c.

Dose: One to four teaspoonfuls.

Liquor Potassii Permanganatis.

Potassium Permanganate	3 dr.	12 gm.
Water, Distilled, boiling, to measure	6 fl. oz.	180 c.c.

One teaspoonful added to one pint of water yields a 1-2000 solution of Potassium Permanganate.

Liquor Sodii Phosphatis.

Each teaspoonful represents about 60 grains (4 gm.) of crystallized Sodium Phosphate and 15 grains (1 gm.) of 50 per cent. Phosphoric Acid in water.

Dose: One or two teaspoonfuls in a wineglassful or more of water, preferably hot, three times a day, one hour before meals.

Liquor Strontii Bromidi.

Each teaspoonful contains:

Strontium Bromide	7·5 gr.	0·5 gm.
Water, Chloroform	30 m.	1·8 c.c.
Water, Bitter Almond, to measure	1 fl. dr.	4 c.c.

Dose: One to four teaspoonfuls.

LOTIONES.

Lotio Plumbi et Opii.

(Lead Water and Laudanum.)

Tr. Opium	3 fl. dr.—1 fl. oz.	12 c.c.—30 c.c.
Water, Lead to measure	6 fl. oz.—1 pt.	180 c.c.—475 c.c.

P. H.

MISTURÆ.

Mistura Astringens.

Each tablespoonful contains:

Extract, Logwood	10 gr.	0·6 gm.
Ac. Sulph., Aromat.	10 m.	0·6 c.c.
Tr. Opium, Camph.	20 m.	1·2 c.c.
Water, Cinnamon, Syrup, Ginger, of each, to measure	4 fl. dr.	15 c.c.

Dose: Tablespoonful.

Mistura Alterans Compositus.

Each teaspoonful contains:

Tr. Prickly Ash	10 m.	0·6 c.c.
Ext. Lappa Minor, Fl.	15 m.	1 c.c.
Ext. Phytolacca, Fl.	15 m.	1 c.c.
Ext. Stillingia, Fl.	15 m.	1 c.c.
Ext. Sarsap., Comp., Fl., to measure	1 fl. dr.	4 c.c.

Dose: Teaspoonful.

Mistura Argenta Composita.

Each teaspoonful contains:

Silver Nitrate	$\frac{1}{16}$ gr.	0·004 gm.
Water, Chloroform, to measure	1 fl. dr.	4 c.c.

Dose: One teaspoonful.

Mistura Ammonii Carbonatis.

Each dessertspoonful contains:

Ammon. Carbonate	5 gr.	0·32 gm.
Mucilage, Acacia	30 m.	6 c.c.
Oil, Gaultheria	½ drop.	0·03 c.c.
Oil, Sassafras	½ drop.	0·03 c.c.
Water, Peppermint, to measure	2 fl. dr.	8 c.c.

Dose: Dessertspoonful to tablespoonful.

Mistura Ammonii Chloridi et Strychninæ.

Each teaspoonful contains:

Ammonium Chloride	5 gr.	0·32 gm.
Strychnine Sulphate	1/30 gr.	0·002 gm.
Water, Chloroform, to measure	1 fl. dr.	4 c.c.

Dose: One to two teaspoonfuls.

Mistura Bromidia.

Each teaspoonful contains:

Sodium Bromide	2·5 gr.	0·15 gm.
Ammon. Bromide	2·5 gr.	0·15 gm.
Potass. Bromide	5 gr.	0·32 gm.
Syrup, Ginger	15 m.	1 c.c.
Water, to measure	1 fl. dr.	4 c.c.

Dose: One to four teaspoonfuls.

Mistura Bromidiæ et Arsenicæ.

(Epileptic Mixture.)

Each teaspoonful contains:

Potass. Bromide	7·5 gr.	0·5 gm.
Sodium Bromide	7·5 gr.	0·5 gm.
Sol. Potass. Arsenite	1 m.	0·06 c.c.
Water, Peppermint	10 m.	0·6 c.c.
Inf. Gent., Comp., to measure	1 fl. dr.	4 c.c.

Dose: One to two teaspoonfuls.

EDITORIAL.

THE U. S. PHARMACOPŒIA.

When the May issue of this JOURNAL shall have reached our readers the next National Convention for the Revision of the Pharmacopœia of the United States will be about ready for work. While it is usual for considerable interest to be manifested in the actions of the Convention, it is doubtful if there ever was a time when there was so much interest displayed by so many different parties. The interests involved are not only those of physician and apothecary, manufacturing chemist and retail pharmacist, but the consumer and Commissioner of Foods and Drugs as well. There never

was a time when there were so many points of view (scientific, medicinal and commercial) from which to consider the Pharmacopœia and so many criticisms and suggestions put forth. The occasion is a peculiar and momentous one, and yet there never was a time, probably, when all concerned had greater respect and confidence in the ability of the Chairman, who will doubtless be re-elected. His own words on the exigencies of the work of revision are stronger than those of any other writer on this subject. He says: "If the Pharmacopœia is to be gradually purged of old and useless drugs and preparations, and not to be brought up to date by the introduction of the newer drugs of recognized value used universally by the medical profession, it might just as well remain unrevised and go out of existence."[1]

We may look, therefore, for changes to be made that are in accord with the advances of the sciences and the commerce of the past ten years, and that will be of a character fitting the first revision of the twentieth century. We will give our readers as full and careful an account as possible of the work of the Convention in the June issue of this JOURNAL.

EDITORIAL NOTES AND COMMENTS.

THE DAILY NEWSPAPER AND NOSTRUMS.

However the people of this country may look upon the attempts of a minister of the gospel to run a daily newspaper as Christ would have managed it, we must acknowledge that like the editor of *Pediatrics:* "We should be interested to know, incidentally, what character of advertisements of patent medicines, nostrums and 'catarrh cures' (with a string of clergymen's testimonials) the new editor deems fit to be published in a 'Christian' daily newspaper." Indeed, we think the editor's pencil might perhaps find freer course among the advertisements of the daily paper than anywhere else.

THE USE OF PREPARATIONS OF CRUDE DRUGS AND ACTIVE PRINCIPLES.

In reply to a letter to a well-known firm of manufacturing chemists, Messrs. Billings, Clapp & Co., of Boston, relative to the comparative use of the active principles of drugs and the preparations

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[1] AM. JOUR. PHARM., 1899, p. 561.

of crude drugs, we received the following, which we are permitted to publish:

"DEAR SIR:—Referring to your inquiry of the third, it is our opinion that the use of active principles of drugs is increasing more rapidly than the use of the ordinary preparations of the same drugs. This is especially the case with morphine and codeine. The sale of opium preparations seems to be dropping off, but the demand for the alkaloid, especially codeine, is increasing all the time. The same is true of cocaine and strychnia. In the case of some of the other principles, we do not think this applies, as in a good many cases it is our experience that the so-called active principle does not give, in all respects, the same action as does the preparation of the drug. We believe that, outside of those drugs whose action results from the presence of a single alkaloid, better average results are secured by giving a tincture or fluid extract than by attempting to give the active principle."

VEGETABLE DRUGS IN THE U.S.P.

Whatever may be the views of any one concerning the work upon vegetable drugs, not only in the U.S.P., but in the pharmacopœias of any country, it is apparent that there are some statements in definition and description which are too narrow when we look at the drugs practically. The question of origin of drugs is in some cases still obscure, and in other cases greater freedom should be given in the selection of commercial varieties. We mention the following instances:

Myrrh.—Deflers has shown that *Commiphora Myrrh* (Nees), Engl., is without any odor, and that the stems do not yield any resin. Deflers and Schweinfurth consider genuine myrrh to be derived from *Commiphora abyssinica* (Berg.), Engl. A part of the myrrh from Arabia is supposed by Engler to be obtained from *C. Schimperi* (Berg.), Engl. It appears that in commerce the Arabian myrrh from Aden is more highly valued than that of the Somalis. Very recently Mr. and Mrs. Philips have collected plants which are similar to that figured in Bentley and Trimen as the source of myrrh, and what the Somalis gave them to understand yielded myrrh. The whole question therefore resolves itself into one of great uncertainty as to whether only one species yields the myrrh of commerce.

Copaiba.—According to Taubert, a good many American species

of Copaifera yield copaiba. The balsam yielded by *C. officinalis*, Jacq. (of Guiana, Colombia and Venezuela), is considered to be the best. Good balsams are also yielded by *C. guyanensis* (Desf.), O. Ktze (Amazon region); *C. multijuga* (Hayne), O. Ktze (Amazon region); *C. confertiflora* (Benth.), O. Ktze (Pianhy); *C. coriacea* (Mart.), O. Ktze (Bahia); *C. Langsdorfii* (Desf.), O. Ktze, and *C. oblongifolia* (Mart.), O. Ktze (both from Rio Janeiro and Minas Geraöe).

Balsam of Tolu.—Besides *Toluifera Balsamum*, L., another plant, *T. peruifera* (L. fil.), Baill, is also said to yield small quantities of an aromatic balsam resembling that of tolu.

Tamarind.—This fruit is not only yielded by *Tamarindus indica*, L. (of tropical Africa), but also by *T. indica, var. occidentalis*, Gaertin (of West Indies and Ecuador), the fruit of the latter being more yellowish in color, more mucilaginous and less cohesive in consistency and with less of an acid taste.

Rheum.—It is quite possible that other species besides *Rheum officinale*, Baill, furnish the commercial root. Dammer mentions: *R. australe*, Don. (of the Himalayas), *R. leucorrhiza*, Pall. (of Central Asia), and *R. Rhaponticum*, L. (of Western China).

Ipecac.—Besides the root of *Cephaelis Ipecacuanha*, Brotero (or Rio Ipecac), there are quantities of another root, viz., Carthagena, which find their way into commerce. From the results of analyses it would appear that the latter is richer in emetic alkaloids than the former. This remains, however, to be proved.

Sarsaparilla—The E. Mexican or Vera Cruz root is yielded by *Smilax medica*, Schlecht. et Cham. The origin, however, of the Jamaica sarsaparilla (given as *S. officinalis*, H. B. K.) and of Para sarsaparilla (given as *S. papyracea*, Duham, of Guiana and Brazil) is not at all certain, but is open to question.

Ammoniac.—Not only does *Dorema Ammoniacum*, Don., yield ammoniac, but also the following species: *D. aucheri*, Boiss. (of Persia), and *D. aureum*, Steks (of Beluchistan). Drude says that African ammoniac is yielded by *Ferula tingitaria*, L. Battandier is authority for the statement that *Ferula communis, var. gummifera*, of Algiers and Morocco yields a gum resin which looks much the same as the African ammoniac.

Sumbul.—This root is the product of not only *Ferula Sumbul* (Kffm.), Hook. f., but also of *F. Narthex*, Boiss.

Storax is yielded by *Liquidambar orientalis*, Mill., and by *L. styraciflora*, L.

We find, further, that in looking at the definitions and descriptions of the drugs in the U.S.P. a more liberal interpretation must be given the subject from a practical point of view. Under Crocus, for instance, only the stigmas are supposed to be present in the commercial article. The article on the market, even under the most favorable circumstances, does not possess 100 per cent. of stigmas. The amount of foreign material that ought to be allowed in the best commercial specimens must be carefully borne in mind by the practical pharmacist (see AMER. JOUR. PHARM., 1900, p. 123).

Quite a number of cases might be mentioned where, in addition to the drug as specified by the U.S.P., other parts of the plant from which it is derived are generally present, as in Belladonnæ folia (includes stems, petioles, flowers and fruits), Matico (includes fruits), Caryophyllus (includes some stems), etc. In some other cases other plants are present, as in Chondrus (a number of algæ). Prof. D. M. R. Culbreth has shown (*Proc. A. Ph. A.*, 1898, p. 765) in a number of vegetable drugs the inferiorities with per cents that are contained in the drugs upon the market, viz., cimicifuga, hydrastis, podophyllum, geranium, senega, wild cherry, black haw, veratrum viride, poke root, wild ginger, angelica and sassafras bark.

There are a number of groups of drugs to which rather stringent definitions, descriptions and limits of admixture may be applied, as in seeds, fruits, roots, barks and flowers. In other cases, the difficulty of giving specific definitions is very clear, as for example in the case of leaves and herbs, rhizomes and plant exudations. To say that certain drugs consist "chiefly" of certain parts covers the ground a little better, *e.g.*, Crocus, chiefly of stigmas; chondrus, chiefly of Chondrus crispus, etc. It would be better, however, if as in the case of crocus the percentage of stigmas present in the commercial product were given.

REVIEWS AND BIBLIOGRAPHICAL NOTICES.

DIE MIKROSKOPISCHE ANALYSE DER DROGENPULVER. Ein Atlas für Apotheker, Drogisten und Studirende der Pharmacie von Dr. Ludwig Koch, ao. Professor der Botanik an der Universität Heidelberg. Erster Band: Die Rinden und Hölzer. Berlin: Verlag von Gebrüder Borntraeger. Preis, 3 Mk. 50 Pfg.

This is the first German work which may be said to concern itself primarily with the investigation of drugs in a powdered form. The present volume is divided into two parts: (1) A general part, including methods of investigation, and (2) the consideration of the different tissues in barks, with their diagnostic features. The barks considered in detail, and of which excellent plates are given, are Cortex Aurantii Fructus, Cortex Cascarillæ and Cortex Cinchonæ succirubræ. The work will appear in parts and promises to be a valuable one.

SAJOUS ANNUAL AND ANALYTICAL CYCLOPÆDIA OF PRACTICAL MEDICINE. By Charles E. de M. Sajous and 100 associate editors, assisted by corresponding editors, collaborators and correspondents. Illustrated with chromo-lithographs, engravings and maps. Vol. IV. Philadelphia: The F. A. Davis Company. 1899.

The present volume contains the last contribution on the subject of "Insanity" by the late Prof. George H. Rohé, of Baltimore. The other important essays contained in the present volume are the articles on "Diarrhœal Diseases of Infants," by Professor Blackader, of Montreal; "Malarial Fevers," by Prof. James C. Wilson and Dr. Thomas G. Ashton; "Diseases of the Liver," by Prof. Alexander McPhedran; "Meningitis," by Dr. Charles M. Hay; "Leprosy," by Dr. Charles E. de M. Sajous. The work is to be regarded like the previous volumes published, as models of their kind.

PROCEEDINGS OF THE PENNSYLVANIA PHARMACEUTICAL ASSOCIATION at its Twenty-second Annual Meeting, held in the College of Pharmacy, Philadelphia, June 13–14, 1899.

A very full account of the proceedings of this Association has already appeared in this JOURNAL (1899, pp. 347–360).

SEVENTEENTH ANNUAL PROCEEDINGS OF THE MARYLAND PHARMACEUTICAL ASSOCIATION, Ocean City, Md., July 11–15, 1899.

The proceedings indicate a very active association in the number and merit of valuable papers as well as in the social features. The following are the subjects of the papers presented: "Lily of the Valley," by A. Schrader; "Artificial Benzoic Acid," by W. C. Powell; "Adulteration of Drugs," by Daniel Base; "Yellow and Green Iodides of Mercury," by J. F. Hancock; "Adulterations of Oils of Savin, Juniper, Sandal and Eucalyptus," by A. R. L. Dohme; "Tablet Triturates," by C. Schmidt; "Glycerin," by

Charles Caspari, Jr.; "Belladonna Plasters," by Charles Caspari, Jr.; "Metric System," by Charles H. Ware; "Synthetic Oil of Wintergreen," by A. R. L. Dohme and H. Engelhardt; "Salicylic Acid in Eye Waters," by Robt. S. McKinney; "Is the Rebate System a Success?" by A. J. Corning; "Belladonna, Digitalis and Henbane Leaves," by A. R. L. Dohme and H. Engelhardt.

PROCEEDINGS OF THE MINNESOTA STATE PHARMACEUTICAL ASSOCIATION at the Fifteenth Annual Meeting, held at Lake Minnetonka, June 20–22, 1899.

The association is well supported, but is deserving of even greater support by the pharmacists of Minnesota. The tone of the proceedings is a good one, although the papers read are by no means numerous. The following are the subjects of the papers presented: "Our Patrons," by W. K. Hicks; "Commercial Education for Pharmacists," by H. Rietzke; "Practical Hints on Pharmacy," by T. Voegeli; "A Continuation of the History of the College of Pharmacy of the University of Minnesota," by F. J. Wulling.

PROCEEDINGS OF THE OHIO STATE PHARMACEUTICAL ASSOCIATION. Twenty-first Annual Meeting, Put-in-Bay, June 22–24, 1899.

The proceedings of this association have already been alluded to in this JOURNAL (1899, p. 406). An excellent likeness of the late Dr. T. L. A. Greve is given, with a short biographical sketch by Prof. J. U. Lloyd.

THE PHILADELPHIA COLLEGE OF PHARMACY.

SEVENTY-NINTH ANNUAL COMMENCEMENT.

The exercises connected with conferring the degrees of Doctor in Pharmacy and Pharmaceutical Chemist were held in the Academy of Music, Wednesday evening, April 18th, at 8 o'clock.

Prayer was offered by Rev. Charles A. Dickey, D.D.

The degrees were conferred by Howard B. French, President of the College.

The following received the degree of Doctor in Pharmacy:

Name.	*Subject of Thesis.*	*State.*
Andrews, William Hall,	***Toxins, Antitoxins and Serum Therapy,***	**New Jersey.**
Austin, Charles Howard,	***Pharmacy,***	**New Jersey.**
Balliet, Howard Paul, P.C.,	***Colchicum,***	**Pennsylvania.**
Barker, Laura Alice,	***Tinctures;***	**Pennsylvania.**
Bartholomew, Arthur,	***Menthol,***	**Colorado.**
Bayles, John Wyckoff,	***The Aniline Dyes,***	**New Jersey.**

Name.	*Subject of Thesis.*	*State.*
Beatty, Arthur William,	*Lippia Mexicana*,	Missouri.
Blew, Joseph Oscar,	*Acacia and Preparations*,	New Jersey.
Brooks, Walter,	*Coto Bark*,	Pennsylvania.
Burchfield, William Clinton,	*Mushrooms*,	Pennsylvania.
Carey, Harris May,	*Two Official Ointments*,	Delaware.
Casperson, Henry Lyle,	*Syrup of Wild Cherry*,	Delaware.
Connell, Francis Joseph,	*Emulsions*,	Pennsylvania.
Cook, Ernest Fullerton,	*Incompatibility of Alkaloids in Solution*,	Pennsylvania.
Corson, Thomas Clark,	*The Collection of Drugs for the Pharmacist*,	Pennsylvania.
Dentler, Roy W.,	*History of Sassafras*,	Pennsylvania.
Desch, Edward Allen,	*Amylum*,	Pennsylvania.
Dietz, Harry Edgar,	*Malt*,	Pennsylvania.
Dooley, John Joseph,	*Iodine*,	Pennsylvania.
Dorman, Harry Milton,	*Cocillana*,	Pennsylvania.
Doughty, John Thompson,	*Absorbent Cotton*,	New Jersey.
Eddy, Eugene Henry,	*Barii Dioxidum and Aqua Hydrogenii Dioxidum*,	Ohio.
Edwards, Manly Bruce,	*Germination of Seeds*,	Pennsylvania.
Eldridge, William Arthur,	*Petroleum Products*,	New Jersey.
Eshleman, Ellis Good,	*Mangani Dioxidum*,	Pennsylvania.
Fabian, Asa,	*Botany in Pharmacy*,	Pennsylvania.
Faunce, George Castor,	*Datura Stramonium*,	Pennsylvania.
Fisher, John Anthony,	*Antitoxin*,	Pennsylvania.
Fox, Harry Terry,	*Oleum Santali*,	Ohio.
Franke, Louis,	*Drug Adulterations*,	Pennsylvania.
Garritt, Henry James,	*Potassii Cyanidum*,	Ohio.
Greenberg, Jacob,	*A Problem in Chemical Nomenclature*,	Russia.
Griest, Joseph Taylor,	*The Education of a Pharmacist*,	Illinois.
Guest, Wilbert Hillman,	*Pharmacy and Bacteriology*,	New Jersey.
Hampson, William Harvey,	*Rhamnus Purshiana*,	Pennsylvania.
Harmony, Edmund F.,	*Examination of Chlorinated Lime*,	Pennsylvania.
Hauber, Christian Henry,	*Hypericum perforatum*,	Pennsylvania.
Heckman, John George,	*The Pharmacist as an Analyst*,	Pennsylvania.
Heinze, George Elmer,	*Mydriatic Drugs*,	Pennsylvania.
Hemberger, Paul Edward,	*Syrupus Ferri Iodidi*,	Ohio.
Hilbish, John Henry,	*Gelatinum*,	Pennsylvania.
Hillebrand, Wm. Gustav,	*Rhamnus Purshiana*,	Pennsylvania.
Hughes, Harry Wilbert,	*Glass*,	New Jersey.
Irby, Moreland Russell,	*Gossypium Herbaceum*,	Virginia.
Jaeger, William Charles,	*Commercial Amyl Nitrite*,	Pennsylvania.
Kazanjian, Rupen Hagop,	*Pharmacy in Armenia*,	Armenia.
Kiefer, William Frederick,	*History of Vaccine*,	Pennsylvania.
Kilgus, Harry Edward,	*Panax Quinquefolium*,	Pennsylvania.
King, Lloyd Stanley,	*Asafœtida*,	Ohio.
Kincaid, Raymond Keck,	*Examination of Glycerin*,	Pennsylvania.

Name.	*Subject of Thesis.*	*State.*
Kintzer, Harry Augustus,	*Aristol*,	Pennsylvania.
Landauer, Oscar,	*Spiritus Ætheris Nitrosi*,	Pennsylvania.
Lehman, Samuel William,	*Hydrastis and its Preparations*,	Pennsylvania.
Levy, Joseph Jacob,	*Acidum Sulphuricum Dilutum*,	Pennsylvania.
McCaffrey, Ward Boleyn,	*Practice of Pharmacy in the South*,	W. Virginia.
McClure, Charles Nevin,	*Eriodictyon*,	Pennsylvania.
McElwain, Wm. Thomas,	*A Sidelight on Pharmacy*,	Pennsylvania.
Mackey, Joseph Quarll,	*The Relation of the Doctor to the Pharmacist*,	Pennsylvania.
Maier, Frank Joseph,	*The Doctor and the Druggist in the Country*,	New Jersey.
Meredith, Harry Lionel,	*The Practical Pharmacy of Cocoanut Oil*,	Maryland.
Merz, Alfred William,	*Diphtheria Antitoxin*,	Germany.
Michael, George Albert,	*Unguentum Aquæ Rosæ*,	Pennsylvania.
Moeller, Carl Fred'k Edw.,	*Emulsions*,	Germany.
Morris, William Torrey, 2d,	*Antimonii Sulphuratum et Sulphidum*,	New York.
Ohliger, Willard,	*Some Experiments in Physiological Assay by the Use of Plants*,	Ohio.
Peiffer, Arthur,	*Improved Suppository Mould*,	Pennsylvania.
Rectenwald, Daniel Lewis,	*Artificial Digestion and Artificial Digestive Ferments*,	Pennsylvania.
Ricketts, Clarence Emerson,	*Odorless Iodoform*,	Pennsylvania.
Saurman, James Spang,	*Aconite*,	Pennsylvania.
Schad, Frank Casper,	*Eucalyptus Globulus*,	Pennsylvania.
Scott, John Calvin,	*Commercial Cold Cream*,	Pennsylvania.
Scott, Levi,	*Ginseng*,	Delaware.
Seabold, H. A. Fahnestock,	*Analysis of Hepatica*,	Pennsylvania.
Seip, Charles Louis,	*The Profession*,	Pennsylvania.
Settle, Peter Smith,	*Pharmaceutical Ideals*,	Pennsylvania.
Shapiro, Henry,	*Revolving Capsule Filler*,	Russia.
Siegle, Herman Christian,	*Syrup of Hypophosphites*,	Illinois.
Smith, George Carroll,	*Mercury*,	Pennsylvania.
Speck, Herbert Arthur,	*Requisites of a Druggist*,	Pennsylvania.
Stacks, Abraham Homer,	*Oleum Ricini*,	Pennsylvania.
Stinson, William Samuel,	*Belladonna*,	Pennsylvania.
Stolz, Louis,	*Extraction of Poisons*,	New York.
Stone, Edw. Browning, Jr.,	*Alkaloids*,	New Jersey.
Sullivan, James Francis,	*Diphtheria Antitoxin*,	Nebraska.
Sunday, Carlton Pierce,	*Vaccine Virus*,	Pennsylvania.
Taylor, Lynwood S.,	*Diphtheria Antitoxin*,	Pennsylvania.
Tucker, Robert Woodliffe,	*Art of Compressing Tablets*,	Bermuda.
Werts, John LaMonte,	*Gentiana*,	Pennsylvania.
Witman, Charles Daniel,	*Quercus Suber*,	Pennsylvania.
Witmeyer, Samuel David,	*Syrupus Ferri Iodidi*,	Pennsylvania.
Young, Alexander, Jr.,	*Honey*,	Pennsylvania.
Young, Edwin Henry,	*Sponges*,	Pennsylvania.

The following received the degree of Pharmaceutical Chemist:

Name.	*Subject of Thesis.*	*State.*
Bishop, Wm. H. Pancoast,	*Medicated Waters*,	Pennsylvania.
Hand, Wilson Howe,	*The Bettendorf Test for Arsenic in Bismuth*,	Oklahoma.
Luebert, August G., P.D.,	*Hydrangea Paniculata*,	Pennsylvania.
Morgan, Lulu Annette,	*Acidum Boricum*,	Pennsylvania.
Mutty, Walter C., P.D.,	*Terebinthina Canadensis*,	New Hampshire.

The degree of Graduate in Pharmacy was conferred upon:

Name.	*Subject of Thesis.*	*State.*
McDonnell, Wm. Joseph,	*Sinapis Nigra*,	Pennsylvania.
Peck, William George,	*Volatile Oils*,	England.

Special certificates for a two years' course in General, Applied and Analytical Chemistry were awarded to the following:

Eugene Henry Eddy, Wm. Charles Jaeger, Ignatz Suess.

The following States and countries were represented by the Graduating Classes:

Armenia	1	Maryland	1	Oklahoma	1
Bermuda	1	Missouri	1	Pennsylvania	61
Colorado	1	Nebraska	1	Russia	2
Delaware	3	New Hampshire	1	Virginia	2
England	1	New Jersey	10	West Virginia	1
Germany	2	New York	2		—
Illinois	2	Ohio	6		100

Prof. Joseph P. Remington, Dean of the Faculty, announced that the following had attained the grade of Distinguished: Ernest Fullerton Cook and Henry Lionel Meredith; and that the following had attained the grade of Meritorious: Oscar Landauer, Peter Smith Settle and Herman Christian Siegle.

AWARD OF PRIZES.

The Procter Prize of a gold medal and certificate for highest grade of scholarship and meritorious thesis was awarded to Harry Lionel Meredith and presented by Howard B. French.

The William B. Webb Memorial Prize of a gold medal and certificate, offered by Mrs. Rebecca T. Webb, for the highest general average in the branches of committee, operative pharmacy and specimens, was awarded to Ernest Fullerton Cook and presented by Wm. J. Jenks.

Pharmacy.—A prize of a gold medal, offered by Prof. Joseph P. Remington, for an original device or contrivance useful in practical pharmaceutical work, was awarded to Arthur Peiffer, with honorable mention of E. F. Cook and Henry Shapiro.

Chemistry.—A prize of $25 in gold, offered by Prof. Samuel P. Sadtler, for knowledge of quantitative chemical analysis, was awarded to Wm. T. Morris, with honorable mention of Paul E. Hemberger and Wm. C. Jaeger.

Materia Medica.—A prize of $25, by Prof. Clement B. Lowe, for the recognition of rare drugs by the aid of the simple microscope only, was awarded to

H. L. Meredith, with honorable mention of C. H. Austin, Louis Franke, Oscar Landauer, F. J. Maier and A. W. Merz.

Pharmacognosy.—A prize of $25, by Prof. Henry Kraemer, for the best thesis on the pharmacognosy of drugs, was awarded to Willard Ohliger, with honorable mention of Asa Fabian.

The Maisch Prize.—A prize of $20, offered by Mr. J. H. Redsecker, of Lebanon, Pa., for histological knowledge of drugs, was awarded to Frank J. Maier, with honorable mention of Louis Franke, Oscar Landauer and H. L. Meredith.

Operative Pharmacy.—A prize of $20 in gold, by Prof. Joseph P. Remington, for the best examination in operative pharmacy, was awarded to E. F. Cook, with honorable mention of Roy W. Dentler, W. F. Kiefer and Levi Scott.

Theoretical Pharmacy.—A prize of a fine Troemner agate prescription balance, offered by Mr. Mahlon N. Kline, of Philadelphia, for the best examination in theory and practice of pharmacy, was awarded to H. L. Meredith, with honorable mention of E. F. Cook, H. C. Siegle, P. S. Settle and L. S. Taylor.

The Robinson Chemical Prize.—A gold medal and certificate, offered by Mr. James S. Robinson, of Memphis, Tenn., for the best examination in general and analytical chemistry, was awarded to Thomas C. Corson, with honorable mention of E. F. Cook, Louis Franke, Paul E. Hemberger and H. L. Meredith.

The valedictory address to the graduating class was delivered by Prof. Henry Kraemer.

COMPLIMENTARY SUPPER.

The professors' farewell supper to the graduates was given on Tuesday evening, April 17th, in the Museum of the College. Many of the officers and trustees of the College were present, as also other invited guests. The supper having been served, the remainder of the evening was devoted to toast-making, Professor Remington, Dean of the Faculty, acting as master of ceremonies.

ALUMNI ASSOCIATION.

The thirty-sixth annual meeting of the Alumni Association was held in Alumni Hall on Monday afternoon, April 16th, with the President, F. W. E. Stedem, in the chair.

Following the annual address of the President, in which a number of recommendations were made relative to the interests of the Association, reports from the Treasurer and Secretary were read. Reports were also received from the several standing committees of the Association.

After the reports had been considered, the election of officers for the ensuing year was held, and resulted as follows:

President, Theodore Campbell; First Vice-President, John H. Hahn; Second Vice-President, Frank G. Ryan; Treasurer, C. Carroll Meyer; Secretary, Wm. E. Krewson; Corresponding Secretary, Wm. G. Nebig; Board of Directors, Jacob M. Baer, M. W. Bamford, C. H. Campbell, Albert Oetinger and L. S. A. Stedem.

The thirty-sixth annual reception of the Association to the seventy-ninth graduating class was tendered on the evening of the same day in the College Museum. The music for the reception was furnished by McKinney's Orchestra.

Introductory remarks having been made by the President, the Secretary called the roll of members elected during 1899-1900. An address to new members was then delivered by President Stedem. The several prizes offered by the Association were presented as follows:

The Alumni gold medal to the member of the graduating class receiving the highest general average was awarded to Harry Lionel Meredith, the presentation being made by the President, F. W. E. Stedem.

The Alumni prize certificates to the members of the class receiving the highest averages in each of the branches were awarded as follows, Dr. A. W. Miller making the presentation: In Pharmacy, to Harry Lionel Meredith; in Chemistry, to Ernest Fullerton Cook; in Materia Medica, to Oscar Landauer; in General Pharmacy, to Peter Smith Settle; in Operative Pharmacy, to Ernest Fullerton Cook; in Analytical Chemistry, to Thomas Clark Corson; in Pharmacognosy, to Harry Lionel Meredith.

Alumni Silver Medal was awarded to Edwin Mason Murphy, of Macon, Miss., for the best general average in the second year examination.

Alumni Bronze Medal was awarded to James Clarence Fitch, of Philadelphia, for the best general average in the first year examination.

The class oration was given by E. H. Eddy; the poem by Carlton P. Sunday; the history by H. M. Carey; and the prophecy by C. L. Seip.

EXAMINATION QUESTIONS.

The following is a copy of the questions given to the students of the Third Class at the recent examination. Those in operative pharmacy and analytical chemistry were practical and conducted in the respective laboratories; the others were written.

THEORY AND PRACTICE OF PHARMACY.

A—(1) If 46·657 grammes of Blue Mass be divided into 144 pills, what is the weight of each pill in grains? (2) Give the official name and ingredients, with quantities, of Blue Mass. (3) How would you take the specific gravity of Blue Mass? (4) State under what circumstances it might be desirable to take the specific gravity of Blue Mass. (5) If the administration in a proper dose of old Blue Mass, or improperly kept Mercury with Chalk, should produce nausea, vomiting, pain in the stomach or gastric irritation, what dangerous impurity would you suspect?

B—Give the synonym, unabbreviated official or Latin name, ingredients, brief outline of process and describe the appearance of diluted hydrobromic acid, black draught, blistering collodion, bay rum, Hoffmann's anodyne, glyconin, Goulard's cerate and Basham's mixture.

C—Give the official name, English name, ingredients, brief outline of process and describe the appearance of Liquor Potassii Arsenitis, Tinctura Iodi, Syrupus Pruni Virginianæ, Infusum Digitalis, Pulvis Morphinæ Compositus, Pilulæ Ferri Carbonatis and Suppositoria Glycerini.

D—(1) Name four liquid alkaloids obtained from official drugs. (2) In what respect do liquid alkaloids differ from solid alkaloids chemically? (3) Name five official preparations from drugs containing liquid alkaloids. (4) Name the alkaloids obtained from Staphisagria. (5) What is the best preparation of

Staphisagria? (6) What is the source of commercial Veratrine? (7) Give the color test for Veratrine. (8) Give the physical test.

E—(1) Name the active constituent of Cantharides. (2) State whether it is soluble in water, alcohol, chloroform, ether, fixed oils, fats. (3) What is its subliming point? (4) What bearing has the solubility of Cantharidin in fats, and its subliming point, in influencing the official direction for making Cantharides Cerate? (5) State the medical properties of Cantharides. (6) Name three official preparations.

F—(1) State what kind of incompatibility is indicated by each of the following prescriptions, and how you would dispense such a prescription:

(1) ℞	Potassi Iodidi	ʒ iiss	
	Hydrarg. Chlor. Cor.	gr. vi	
	Ext. Cinchon. Fld.	fʒ ss	
	Elix. Aurantii ad	fʒ iv	
(2) ℞	Ol. Tereb.	fʒ ij	
	Tinct. Opii.	fʒ i	
	Iodini	ʒ ss	
	M. ft. solutio.		
	Use externally.		
(3) ℞	Quin. Sulph.	gr. xl	
	Sodii Salicyl.	ʒ iiss	
	Acid Sulph. Dil.	fʒ ij	
	Aquæ Fœniculi	fʒ viij	
	Fiat Solutio.		

G—(1) What three classes of suppositories (based upon their method of manufacture) are now recognized? (2) Give briefly the process for making each class. (3) State the method preferred for making each of the following rectal suppositories (15-gr. size): (*a*) Iodoform, 5 gr., and Carbolic Acid, 1 gr., in each. (*b*) Glycerin suppositories (official process).

H—(1) What is the object of pharmaceutical legislation? (2) What are the limitations to National jurisdiction in such legislation? (3) What is an "ex post facto" law, and why is such a law unconstitutional? (4) Give the reasons for advocating the payment of all expenses of enforcing Pharmacy laws by the State. (5) Why is it important for each pharmacist to know accurately the "poison laws" of his State, and to strictly obey them?

J—Criticise and translate the following. Write out with English names the ingredients and quantities. State how you would compound them, or what course you would pursue. Give the meaning of the numbers or marks on the margins.

85237

℞	Plumbi Acetas	
	Zinci Acetas, āā	gr. xv
	Cupri Sulph.	gr. x
	Morphi Acetas	gr. iij
	Aqua destil.	fʒ viij

S.—Use as directed.

7/9/80 B. B. R.

℞ Phosphori gr. i
Benzol Acet. ℥ij
Calcii Chlor. ℥iij
Tr. Zingib. ℥ss
Aquæ, ad ℥xij
Misce ft. mist. sec. art.

S.—Capiat ℥ss bis. vel. ter in die ex cyatho aqua c. spt. vini gallici.

3/21/94 27398

℞ Syr. Pruni Virg. ℥ij
Acid Hydrochl. ℥ss
Syr. Scilla ℥i
Tinct. Thebaici ℥i
M. S.—Teaspoonful 3 times daily.—S.

St.

81243

K—Criticise and translate the following. Write out with English names the ingredients and quantities. State how you would compound them. Give meaning of numbers and marks on margin.

℞ Argent. Oxid gr. xvi
Strychnia gr. i
Pulv. Capsici gr. xxiv
Ext. Gentian ℈ij
Box a full m = xxxij.
Sig.—On box the contents of each pill. One after each meal.

60587

o= D.

℞ NaBr ℥ij
KI ℥ss
H_2O ℥ij
M. Sig.— ℥i after meals.

℞ Acidi Carbolici f℥ij
Ext. Opii ℥ij
Ol. Olivæ Oss
Misce bene
□ △ K. 625.

CHEMISTRY.

A—(1) What is the distinction between an "Ether" and an "Ester" in organic chemistry? (2) Mention some of the distinctive chemical reactions of each class. (3) Give official examples of each class.

B—(1) What is an aldehyde, and how does it differ from a ketone? (2) Give an example of each class from both the fatty and the aromatic series. (3) What reactions are common to both classes? (4) By what difference in reactions can they be distinguished?

C—(1) What is meant in organic chemistry by the term "unsaturated acid?" (2) Give an official example of such an acid. (3) By what reagent is their presence recognized in the analysis of fats? (4) What is a "phenol-acid?"

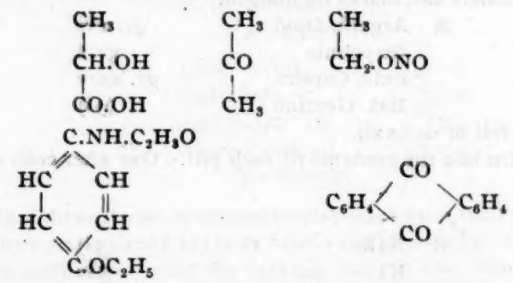
Illustrate by an official example. (5) What is an "alcohol acid?" Illustrate by an official example.

D—(1) To what class of compounds does cellulose belong? (2) By what reactions can its presence in any material be identified? (3) Give the formulas of the compounds resulting from the nitration of cellulose. (4) What are the technical names and uses of these products? (5) What compounds of this latter kind are official?

E—(1) Describe Acidum Benzoicum and write the reaction for its artificial production. (2) Describe Acidum Salicylicum and write the reaction for its artificial production. (3) State the physical and chemical tests by which the two can be distinguished. (4) Show by graphic formulas the relation of these two acids to each other.

F—(1) To what class of compounds does Acidum Gallicum belong? (2) Write the formula of Basic Gallate of Bismuth. (3) Show by formulas the relation of Gallic Acid and Pyrogallol. (4) To what class does this latter compound belong?

G—(1) Write the proper chemical names, and when official, give the pharmacopœial names of the following compounds:



H—Write the graphic formulas of Iodoform, Acetic Ether, Sodium Sulphocarbolate, Acetanilid and B-Napthol.

I—(1) Give the outline of the systematic examination for poisons by Dragendorff's scheme. (2) State the effect of Phosphorus poisoning, the antidote, and the tests for its detection. (3) State the effects of Arsenic poisoning, the antidote, and the tests of its detection.

K—(1) What are the chief sources of water supply for cities and towns, and what is their relative purity? (2) Mention some of the approved methods for the artificial purification of drinking water. (3) By what means is the natural purification of water effected? (4) State what are important determinations to be made in the sanitary analysis of a drinking water.

MATERIA MEDICA.

A—Ginger.—(1) Give the official and botanical names, habitat, natural order and constituents. (2) Name four commercial varieties. (3) What is meant by the terms "coated" and "uncoated" as applied to this drug? (4) What action does the drug have upon the epidermis, the salivary glands, the gastric glands? (5) Name an official fruit derived from the same natural order. (6) What part of the latter is used in Pulvis Aromaticus? (7) Name two preparations of which it is an ingredient.

B—Spores.—(1) State the official and botanical names, natural order, habitat and manner of collection of the spores which are official. (2) What is their shape, color and principal constituent? (3) How must they be treated to obtain the latter? (4) How are they acted upon when thrown upon water, or into a flame? (5) How can an adulteration of starch or pine pollen be detected? (6) What are the uses of this drug in pharmacy and medicine?

C—Ergota.—(1) Give the name of the fungus producing it, and the plant upon which it grows. (2) Describe briefly the three stages of growth of this fungus, and state which of these constitutes the official drug. (3) What are the best ways of keeping it, and how can rancidity be prevented? (4) Name its three most important constituents. (5) Why is this drug used as a hæmostatic, and what are the effects of its long-continued use when present as an adulteration of flour? (6) What is its action upon unstriped muscular fibre, and upon what organ does it principally act? (7) Why is its indiscriminate sale reprehensible?

D—Cupuliferæ.—(1) Give the official and common names of a bark, an excrescence, a leaf and a volatile oil obtained from plants belonging to this order. (2) Explain briefly the cause of the growth of this excrescence, and state its constituents and medical properties. (3) Does the above-mentioned volatile oil pre-exist in the plant, and with what synthetical chemical is it identical? (4) With what other volatile oil is it nearly identical, and what is the difference between them? (5) State its medical properties.

E—Rhubarb.—(1) Give official name, natural order and habitat. (2) Name the three varieties formerly in commerce, and state which was considered the most valuable. (3) Name its principal organic constituents. (4) What are the points of good quality in Rhubarb? (5) How can you distinguish the official from the European-grown root? (6) State briefly the action of this drug upon the gastro-intestinal tract. (7) What color is imparted by it to the urine and the feces? (8) How is the medical action of the drug modified by torrifying it?

F—Animal Drugs.—Give the official and common names and part used of the drugs derived from the following sources, viz.: (1) Acipenser Huso; (2) Gadus Morrhua; (3) Physeter macrocephalus; (4) Apis mellifica; (5) Bos Taurus; (6) Sus scrofa; (7) Ovis Aries; (8) Moschus moschiferus; (9) Coccus cacti; (10) Gallus Bankiva.

G—Digestive Ferments.—(1) Name two digestive ferments. (2) The animal, and part of the animal, from which each is derived. (3) The kinds of food upon which they act, and the part of the intestinal tract in which this action takes place. (4) What are the changes which take place in these foods to fit them for absorption? (5) In what doses, and at what times, are they best given? (6) What can be prescribed with each to increase its efficiency?

H—Vanilla.—(1) What is the nature of the plant which produces it, and what is its habitat? (2) Describe its cultivation and preparation for the market. (3) What is the appearance of the ripe, fresh fruit, and what are the characteristics of a good bean? (4) Name three varieties, and state which of these is preferred. (5) Upon what constituent does its aroma depend? Does it exist in the green pod? (6) From what sources can this constituent be artificially prepared? (7) What are the medicinal properties of this fruit?

J—Emergencies.—State briefly what you would do in the following cases if no other medical aid was procurable: (1) Hemorrhage from the radial artery;

(2) Asphyxia from drowning; (3) Sprain of the ankle; (4) Aconite poisoning; (5) Arsenic poisoning.

K—Emergencies.—Should a case be brought to your store showing the following symptoms, viz.: Deep coma from which the patient could not be aroused, skin cold, face and lips livid, minutely contracted pupils, pulse slow and weak, respiration very slow, reflexes abolished, but no paralysis—what would be your decision as to the nature of the case, and your treatment, if required to act in absence of a physician?

COMMITTEE.

A—(1) How many 250 c.c. bottles will be required to hold a gallon of official Glycerin (no allowance being made for space in bottle, or loss)? (2) At what price per litre would it be necessary to sell official Chloroform, costing $1.40 per kilogramme, to realize 20 per cent. on the sale? (3) If the price of the following prescription was 50 cents, what would be the proper price for double the quantity if the reduction were at the rate of 25 per cent., and what, if the reduction on four times the quantity were at the rate of 35 per cent.?

Write out the quantity of each ingredient that you would use for four times the original number of pills, expressing these in Apothecaries' Weight and characters:

℞	Phenacetine	50 grains
	Salol	48 grains
	Quinine Sulphate	24 grains

Make into 24 pills.

B—Give a concise description of the physical characteristics of the following, noting color, consistence, taste, odor, etc., of each: Liquor Ferri Tersulphatis, Acidum Stearicum, Tinctura Cardamomi, Syrupus Ferri Iodidi, Liquor Acidi Arsenosi, Ferri et Quininæ Citras, Linimentum Calcis, Mistura Ferri Composita, Oleum Sesami and Oleatum Hydrargyri.

C—(1) Give the botanical name, natural order and habitat of the plant from which Copaiba is obtained. (2) Briefly describe Copaiba and the method of production. (3) Give the unabbreviated official names of the preparations into which Copaiba enters, and how is each prepared? (4) Name the acid found in Copaiba. Into what saline combination does it enter in an official preparation? (5) What are the best methods of administering Copaiba? (6) To what constituent of Copaiba is its liquid character due?

D—(1) A pharmacist received the following prescription:

℞	Stront. Lact.	ʒij ℈ij
	Syr. Aurant.	fʒss
	Aq. q. s. ad	fʒij

Mft. Sol.

D. S.—fʒi every three hours.

As his stock of the first ingredient is exhausted, he decides to make some extemporaneously, having an abundance of Strontium Carbonate C.P. and Lactic Acid (U.S.P.) (or 75 per cent.).

How much of each will be necessary to make the above quantity, and how would you proceed to fill the prescription?

Strontium Lactate has the formula $Sr(C_3H_5O_3)_2 3H_2O$.

Use the following atomic weights in your calculation:

Sr. = 87·3; C = 11·97; O = 15·96; H = 1.

E—(1) Give Latin name, specific gravity, symbol and valence of Silver. (2) Name some of the localities from which it is obtained. (3) In what combination does Silver usually exist in nature? (4) What process is generally used in separating it from this combination? (5) Name and describe a compound formed by Silver with Oxygen, giving its symbol and formula. (6) What is the most important soluble salt of Silver? (7) Give the official name of, and process for, Mitigated Caustic. (8) Outline the process for Silver Nitrate, and state its usual impurities. (9) Give a test for the compounds of silver. (10) What precaution is necessary in dispensing solutions of Silver Nitrate?

F—If you were consulted by a physician and asked as to the best methods or formulas (pharmaceutically) for giving the following substances to the sick by the mouth, what would you suggest: Oil of Turpentine, Castor Oil, Quinine Sulphate, Salicin, Tincture of Ferric Chloride, Opium, Potassium Iodide, Sodium Salicylate, Strychnine Sulphate and Silver Nitrate.

G—Pharmacognosy.—What are the distinguishing features of the leaves of Belladonna, Hyoscyamus and Stramonium: (1) In a crude condition. (2) In a powdered condition. (3) In chemical constituents.

H—Give the official title, botanical name of plant, natural order, habitat and active principles of each of the following drugs: Levant Wormseed, Quaker Button, May Apple, Wild Cherry Bark and Queen's Root.

J—What is a "syrup?" What is "simple" syrup? What is a "medicated" syrup? Name several processes in making syrups, giving the advantages or disadvantages of each process. What precautions are necessary in the use of heat? What kind of sugar is best to use? Why? What causes "vinous fermentation" in syrup? How may syrups be clarified? What is the specific gravity of Syrupus? Name ten (10) official syrups, giving Latin and English names.

K—Criticise the following prescriptions; state what precautions are necessary in compounding; write out full official name of each ingredient:

(1) ℞	Ext. Stramon.		gr. xv
	Liq. Plumbi, S. A.		gtt. x
	Acid Tannic		gr. viij
	Adeps Lanæ Hyd.		℥ss
	M.—ft. ung. sec. art.		
(2) ℞	Bismuth S. Nit.		gr. xl
	Sod. Bicarb.		gr. xx
	Pepsin		gr. xv
	Ft. Pil. No. XX. sec. art.		
(3) ℞	Pil. Cœrul.		gr. xx
	Ext. Henbane		gr. x
	Pulv. Cayenne		gr. v
	M.—Div. in Pil. No. X.		

Sig.—Take two at night, with aperient in the morning.

OPERATIVE PHARMACY.

(1) *Alcoholmetrical Test.*

Estimate the amount of alcohol in the sample of white wine. Put all calculations on the sheet of paper, with your name and examination number, and put on the label the letter of the sample estimated.

(2) *Granulated Salt.*

Acid Salicylic	7·	Grammes
Sodium Carbonate, C.P.	6·5	"
Distilled Water, q. s.		

Make Sodium Salicylate. Put in a wide-mouth bottle.

(3) *Emulsion.*

Make 100 c.c. of an emulsion which shall contain 50 per cent. of Cod Liver Oil, by the English method; place in a bottle and a label on the bottle, giving quantity of each ingredient used.

(4) *Pills.*

Ferrous Sulphate	4·	Grammes.
Potassium Carbonate	2·	"
Sugar, Powdered	1·	Gramme.
Tragacanth	·25	"
Althæa, Powdered	·25	"
Glycerin, Water } of each	3 drops.	

Make 25 pills; coat with silver.

N. B.—The silver leaf will be found in the pill box.

(5) *Plaster.*

Spread a breast plaster, about 6 inches in diameter. Soap plaster will be found in the dipper.

ANALYTICAL CHEMISTRY.

The examination in Analytical Chemistry included urinalysis and practical examinations of pharmacopœial preparations by volumetric processes, preceded by a written examination on volumetric methods.

SPECIMENS.

The following specimens were placed before each of the members of the class for recognition:

(1) *Pharmacy.*—Adeps Benzoinatus, Aqua Amygdalæ Amaræ, Syrupus, Spiritus Juniperi Compositus, Tinctura Cardamomi Composita, Pulvis Cretæ Compositus, Pulvis Rhei, Acidum Sulphuricum Aromaticum, Tinctura Aurantii Amari, Extractum Cinchonæ Fluidum.

(2) *Chemistry.*—Acidum Aceticum, Sodii Boras, Plumbi Oxidum, Potassii Chloras, Potassii Bitartras, Sodii Salicylas, Amylum, Saccharum, Naphthalinum, Liquor Sodæ Chlorata.

(3) *Pharmacognosy.*—Bryonia, Lappa, Santalum Rubrum, Granatum, Xanthoxylum, Coca, Matico, Anisum, Chenopodium, Guarana.

(4) *Committee.*—Adeps Lanæ Hydrosus, Glycerinum, Spiritus Ætheris Compositus, Tinctura Ferri Chloridi, Acidum Boricum, Alumen, Potassii Ferrocyanidum, Aconitum, Rhamnus Purshiana, Conium.

MINUTES OF THE PHARMACEUTICAL MEETING.

The stated Pharmaceutical Meeting was held Tuesday, April 17th.

J. H. Redsecker, Ph.M., of Lebanon, Pa., a member of the College and a well-known member of the Pennsylvania Pharmaceutical Association, presided.

The minutes of the previous meeting were allowed to stand as published.

Frederick L. Lewton, of the Philadelphia Museums, was the first speaker and gave a very interesting talk on "The Cultivation and Economics of Agave," which was illustrated with lantern views and specimens of the various products obtained from the plant. The paper will be published in full in a later issue of this JOURNAL.

M. I. Wilbert, Ph.G., read a paper having special value for working pharmacists, which was entitled "A Few Remarks on, and Working Formulas for, the Official and Other Preparations of Soap" (see page 212). In addition to the specimens of the preparations the formulas for which were given, the author exhibited a sample of a 50 per cent. emulsion of crude carbolic acid, which on account of its miscibility has been found useful for making weaker solutions of the acid; and also a sample of a soap liniment in which methyl alcohol was substituted for ethyl alcohol. The latter preparation has not, however, been sufficiently tested to determine its freedom from objectionable properties.

A paper on "An Examination of Acacia," by Robert G. Shoults, P.C., of Sonoma, Cal., was read on behalf of the author by Prof. Henry Kraemer, and will be published in full in a subsequent issue of this JOURNAL.

Mr. Shoults is of the opinion that qualitative tests alone are of very little value for detecting dextrin in powdered acacia, and from his experiments it would seem that the polariscope furnishes a more efficient means for the purpose. The following took part in the discussion of the paper: Dr. C. B. Lowe and Messrs. Lewton and Kebler. Prof. Kraemer referred to a method which he has found readily applicable in determining the purity of powdered acacia (see this JOURNAL, 1899, p. 541).

Lyman F. Kebler read a paper entitled "Suggestions for Revising the Seventh Decennial United States Pharmacopœia" (see page 205).

The paper elicited an interesting discussion, and among those participating in it were: Messrs. Stedem, Redsecker, Boring, Kraemer, Wilbert and the author. During the course of his remarks Mr. Kebler said that, contrary to general reports, he had found the jalap of the market to be of good quality. He had found some samples to assay as high as 15 per cent. and some as low as 1 per cent. Seventeen samples which he assayed averaged over 11 per cent.

Mr. Kebler called attention to some spheroidal crystals of ferric chloride and remarked that the fact of this chemical assuming such a form was a very interesting one. He also exhibited a specimen of crystals of potassium chloride which were slightly conical in form, resembling the calyx of a flower.

FLORENCE YAPLE,
Secretary pro tem.

CHICAGO COLLEGE OF PHARMACY.

After the annual business meeting and election of officers of the Alumni Association of the Chicago College of Pharmacy, the School of Pharmacy of the University of Illinois, on the evening of March 28th, the fourth of the series of meetings for the discussion of pharmacopœial revision was held. Mr. W. B. Day read a paper on "The Proposed Introduction of Powdered Drugs into the Pharmacopœia." He stated that such introduction would mean simply the appending to the present official description of the entire cellular drugs the microscopical description of the powder. The latter description would involve only a mention or a brief description of the characteristic structural features. Objections that had been made were: greater difficulty in identifying the drug, greater difficulty in determining its quality and purity and increased liability to deterioration. As against these arguments, he urged that instruction in the use of the microscope and in the study of the minute structure of drugs now occupies a prominent place in the curricula of our colleges of pharmacy and that such knowledge is now more widely diffused among pharmacists than ever before; that microscopes of excellent quality can be had at low prices; that the apparatus and skill required for the examination of drugs microscopically are not greater than for the chemical examinations now described in the Pharmacopœia; that suitable containers are more easily provided for powders than for entire drugs; that considerations of convenience and utility have led to the almost exclusive use of powdered or cut as compared with whole drugs, and that inasmuch as drugs are used so largely in the powdered form, it would seem best that they be recognized by the Pharmacopœia in this form, to the end that standards of identity and purity may thereby be established. In this respect, we may well follow the example of the German Pharmacopœia to be issued next year, which will contain descriptions of the more important drugs in the form of powder.

A preliminary report on "The Therapo-pharmacy of the Solid Preparations for Internal Use" was presented by Professor C. S. N. Hallberg. It was stated that the confusion that prevailed relative to the many forms of these preparations had led him to attempt a classification based upon their general therapeutic purposes and comprising the following groups: (1) those affecting the mouth and the respiratory organs, and embracing the troches; (2) those intended for solution or action in the stomach, including the powders and triturations with their modifications as cachets, capsules and tablet triturates, and (3) those intended to act through the intestinal tract, for which purpose the pill is the form best adapted. The drugs comprised in these respective groups were indicated by their therapeutic properties, as antiseptics, astringents, cathartics, diuretics, etc., and these properties would indicate the pharmaceutical form to be adopted in order to secure the desired therapeutic effect. General titles and definitions for the various classes of preparations, together with general formulas for their preparation, were presented. Should these be introduced into the Pharmacopœia, it would not only aid the pharmacist and the prescriber in discriminating between these various preparations, but would have a tendency to check the promiscuous use of tablets by the medical profession.

William Procter Jr.